



# INDEX OF SERVICE LITERATURE

# GENERAL INFORMATION AND IDENTIFICATION

MANUFACTURED

#### THE S.U. CARBURETTER COMPANY LIMITED

WOOD LANE

ERDINGTON

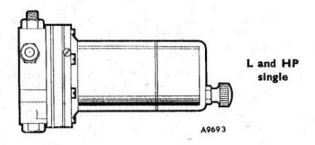
BIRMINGHAM 24

TELEPHONE: ERDINGTON 7371 (9 lines) TELEGRAMS: CARBURFLEX, BIRMINGHAM



S.U. SERVICE SHEET No. AUA 237A (C) THE BRITISH MOTOR CORPORATION LIMITED. 1966

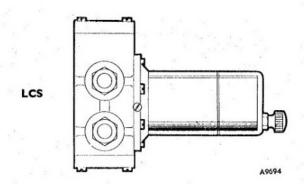
# S.U. FUEL PUMPS—IDENTIFICATION OF BASIC TYPES (Earlier Models)



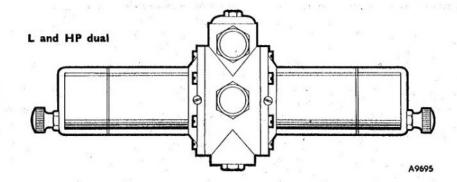
High- or low-pressure. Single: 6-, 12-, or 24-volt. Minimum flow, HP—7 gal. per hour, L—8 gal. per hour. Valves in outlet connection, plain disc, outlet valve in cage. Filter at bottom. Outlet connection at top. Sandwich plate and gasket between diaphragm and body.

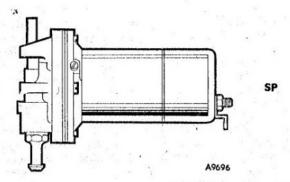
Earlier HP coil housing  $\frac{9}{16}$  in. longer than L, later models same external length as L.

Large capacity. Single: 12- or 24-volt. Minimum flow, 12½ gal. per hour. Valves inside top cover, outlet valve in cage, earlier valves both plain disc, later inlet plain disc with spring, outlet plastic assembly. Filter inside bottom cover.



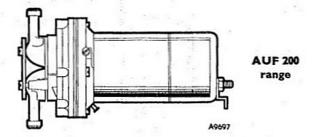
High- or low-pressure. Dual 12-volt, working simultaneously. Minimum flow, HP—16 gal. per hour, L—20 gal. per hour. Valves under top caps, outlet valves in cage, plain disc. Filter at bottom.





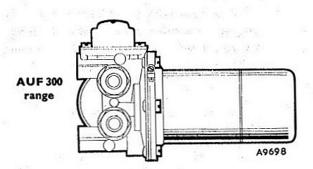
High-pressure. Single: 12-volt. Minimum flow, 7 gal. per hour. Valves inside body, plastic type held by retainer plate and single screw. Filter in inlet connection.

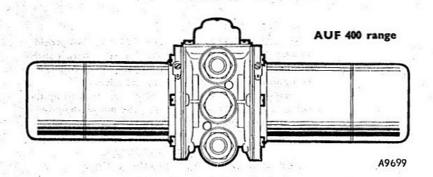
# S.U. FUEL PUMPS—IDENTIFICATION OF BASIC TYPES (Later Models)



High-pressure. Single: 12-volt. Minimum flow, 7 gal. per hour. Valves accessible externally through inlet and outlet nozzles, plastic type all held by circular clamp plate and two screws. Filter under inlet nozzle.

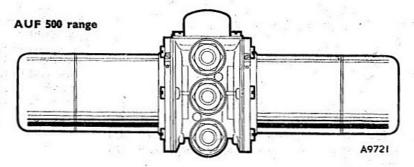
High-pressure. Single: 12-volt. Minimum flow, 15 gal. per hour. Valves inside body, plastic type held by clamp plate and two screws. Filter on inlet valve, plain air bottle on inlet, flow-smoothing device on delivery.





High-pressure. Dual working simultaneously. Single inlet, single outlet. 12-volt. Minimum flow from both—30 gal. per hour. Valves inside body, plastic type held by clamp plate and two screws. Filter on inlet valve. Plain air bottle on inlet, flow-smoothing device on delivery.

High-pressure. Dual normally working separately. Dual inlet, single outlet. 12-volt. Minimum flow, 12½ gal. per hour each. Valves inside body, plastic type held by clamp plate and two screws. Filter on inlet valve. Plain air bottle on inlet, diaphragmtype on delivery.



#### Pump voltage

All S.U. pumps can be identified for voltage by the marking and colour of the end-cover, thus:

6-volt—Brown

12-volt-Black

24-volt-Blue.

#### INDEX OF PUMP SERVICE LITERATURE

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	Pump type/car model refer	rence list							AKD	4813	В.			
	Recommended mounting p	ositions							AKD	4814	A			
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Part 2.	Description and Fault D	iagnosis												
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The s	L and HP type single pump		••	••	••	••	• •	• • •		4793		,		
	LCS type pump			• •	••	•••	••			4794				
	L and HP type dual pump	•• ••	••	••	••		••			4795				
	SP type pump			••	••	••	••			4796				
,	AUF 200 range pump			••	••	••			AKD	4797	В			
	AUF 300 range pump			• •				••	AKD	4798	В			
	AUF 400 range pump					••		••	AKD	4799	В			
	AUF 500 range pump			•••					AKD	4800	В			
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Part 3.	Dismantling and Reasse	mbling Ins	structio	ns					4 2 3					
	L and HP type single pump								AKD	4001				
		,	••	•••	••	•••	••	••	AKD					
100	LCS type pump		•••	••					AKD					
-	L and HP type dual pump			• •	•••	: .	•••							
	SP type pump			•••		••	••		AKD					
	AUF 200 range pump		DI	•	••	••	••	•••	AKD					
	Supplement—Plastic Armat	ture Guide	Plate	••	••			•••		4805/1				
	AUF 300 range pump			••	••	••	••	••	AKD					
	AUF 400 range pump		••	••	• • •	·:·	• • •	••	AKD					
	AUF 500 range pump		••	•••	••	••	••	••	AKD	4808			٠	
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Part 4.	Reconditioning and Tes	ting												
	S.U. pump testing instructi	ons (S.U. t	est rig)					3.5.	AKD	4809 A				
1.5	S.U. pump reconditioning i			70%		15		1.2.		4810 A				
	S.U. pump testing instructi			rig)		•••	•		AKD				A	
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Additional and revised leaflets will be issued from time to time. Record new issues in the spaces provided.

#### S.U. PUMP SPECIFICATIONS

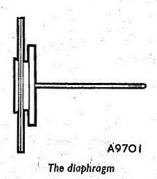
#### General

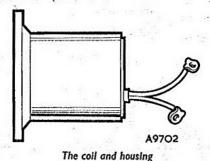
S.U. electric fuel pumps are fitted to an increasing variety of vehicle types, calling for a wide range of installation arrangements, pressures, suctions, and special features. The pump in each case is a variation on a basic specification to suit the particular installation requirements:

A current list of pump types, specification numbers, and the vehicles to which they are fitted, is published as occasion arises for the use of authorized Distributors and Dealers.

Basically all S.U. fuel pumps comprise four main assemblies.

- The body: housing the valves, filter, inlet and outlet connections.
- 2. The diaphragm: being the fuel displacement element.
- 3. The coil and housing: providing the motive energy.
- The rocker and pedestal: comprising the actuating mechanism.



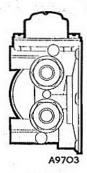


#### Earlier-type pumps

L, HP, LCS, Dual L, and HP and SP pumps are recorded under specification numbers, having the prefix letters AUA or AUB.

All earlier-type pumps in current production bear this specification number stamped on a metal plate secured under two of the coil housing screws. Any new part fitted during reconditioning must be in accordance with the particular specification.

Externally the earlier HP pump coil housings were 16 in. longer than the L type. All HP pumps are now fitted with the shortened coil housing of the same overall length as that of the L type.



The body

Production of the long-coil housing has ceased but it is still used in reconditioning when a coil, similar to that used in short housing pumps, but wound on the longer core, is used. Long and short versions of the pump are interchangeable, but because components differ, and may be required as spares, such pumps carry a prefix to the specification number, thus:

AUA 50 long housing pump, built with short-coil housing, becomes AUA 150.

AUA 52 long housing pump, built with short-coil housing, becomes AUA 152.

As the pumps are functionally identical, in service the nonprefixed pumps may be replaced by prefixed pumps, e.g. AUA 50 by AUA 150 and vice versa.

#### Later-type pumps

The AUF type of pump has been introduced to provide a simplified range using standardized parts where possible, resulting in simpler servicing. These pumps differ from earlier types mainly in the design of body and valves used.

Pumps in the AUF range are always referred to by their specification number, e.g. AUF 201, and not by the previous type to which they correspond thus:

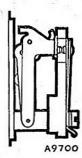
AUF 200 to 299 corresponds to HP and SP types.

AUF 300 to 399 corresponds to LCS type.

AUF 400 to 499 corresponds to Dual HP type.

AUF 500 to 599 a new double-entry fuel pump.

As with the earlier-type pumps, the AUF range bear the specification number stamped on a metal plate secured under the coil housing screws. Again, any new part fitted during reconditioning must be in accordance with the particular specification. When the specification of a pump in the AUF range is altered by the addition of specially vented end-covers and coil housings, and with diaphragms of new plastic material protected by thin nylon barrier diaphragms etc., then the modified pump is allotted another number, e.g. AUF 200 becomes AUF 201.



The rocker and pedestal

# 

AUTHORIZED DISTRIBUTOR:

# LIST OF ABRIDGED PUMP SPECIFICATIONS



MANUFACTURED

0.75

#### THE S.U. CARBURETTER COMPANY LIMITED

Proprietors: MORRIS MOTORS LIMITED

WOOD LANE

ERDINGTON

**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM



rump No.	Voit	rres.	Cont	- Core	Condenser	Special features	Alternatives	REMARKS
AUA3	. 21	-	Ω	Δ.		Double-pole	AUA3, 25, 58, 66, 79	Convert to single-pole. Change unions if necessary
AUA24	12		Ŋ	띪		Tropicalized		Not available as Service replacement
*AUA25	12		s	监				601
AUA26	9	-1	s	<b>.</b> .		34		
AUA35	12	٧	۵	۵		Suppressor unit fitted	2	Not available as Service replacement
AUA58	12	J	۵	۵		Land Rover	AUA79	
AUA66	12	ك	S	H		Nozzle outlet	AUA25	Change over outlet nozzle if necessary
AUA79	12	نا	Δ	띪		Land Rover and SAAB	AUA58	
AUA89	12	٠	۵	紐		SAAB	AUA79	Change over outlet nozzle if necessary
AUA91	12	٦	Δ	Ħ		High wattage coil. SAAB	AUA89, AUA79	Change over outlet nozzle if necessary
AUA27	12	I I	Δ	#H			AUA56, 156	
AUA36	12	I	S	æ			AUA56, 156	
AUA42	12	Ι.	۵	F	υ	Air bottle	AUAS0, 150, 82, 182	Change over air bottle if necessary
AUA43	9	Ι	۵	띪			i de les	-
AUA45	12	Ι	۵	ER			AUASO	
AUASO	12	I	۵	띪	Ų	Lucar feed terminal	AUA150, AUA83, 182, AUB150	
AUA54	5	<b>I</b>	S	ER	Ų	Single contact	AUA50, 150, 154, 82, 182	
*AUA56	12	Ξ.	۵	띪			AUA156	
AUA67	12	Ι	v	H.	U	Single contact	AUA50, 150, 54, 154, 167	Change over nozzles if necessary
AUA68	24	I	۵	H	U	94		
AUA69	12	Ι	v	Ħ	O	Single contact, Nozzie inlet	AUA54, 154, 67, 167, 69, 169	Change over nozzles and union
070114	Ç	π		c				Coventry Victor Co. Led
AUAZI	. 2	: I	) <u>D</u>	. E		Air bottle	AUA56. 156	מובותו אורתו כסי דותי
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Change over nozzles if necessary		Add Lucar connector if necessary	Change over terminal knob if necessary		Change over nozzles	Change over nozzles if necessary	Change over inlet union if necessary	7	Change over nozzles if necessary	2			Change over nozzles if necessary	Change over inlet union if necessary		Breather tube under-floor mounting	Breather tube, under-floor mountings	<b>.</b>	With conversion kit AUE40—Morris and Austin Mini	AUE42—Mini-Traveller AUE43—Mini-Traveller (underfloor	AUE44—A55. Oxford V. Wofseley	15/6	AUE45—A55 Countryman, Oxford V Traveller		With conversion bit	AUE46—A99, Wolseley 6/99, Princess 3-litre		
AUAS0, 150, 82, 182, 184		AUA50, 154, 182	AUA54, 150, 182	AUAS6	AUA54, 154, 67, 69, 169	AUA54, 154, 67, 167, 69	AUA82, 150		AUA84, 150, 182	AUB154, 182, AUA50, 150, 154	AUB150, 182, AUA150, 154, 182	AUB154, 169, AUA67, 154, 169	AUB154, 167, AUA69, 154, 169	AUB150, AUA82, 150, 182	AUB150, 182, AUA84, 150, 182, 184	AUP201. AUP304	AUF1201, 204	ž.			AUA83	AUB83				AUA84	AUA184	
Large nozzies		Short coil housing	Short coil housing	Short coil housing	Short coil housing. Nozzles	Short coil housing, Inlet nozzle	Nylon tube on inlet union	Renumbered AUF200	Short coll housing. Large nozzles	Steel spindle diaphragm	Steel spindle diaphragm	Steel spindle diaphragm. Nozzies	Steel spindle diaphragm. Inlet nozzle	Steel spindle diaphragm. Nylon tube	Steel spindle diaphragm. Large nozzles		Steel spindle diaphragm					Full production specification					Full production specification	
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AUASH	AUA90	AUA150	AUA154	AUA156	AUA167	AUA169	AUA182	AUA183	AUA184	AUB150	AUB154	AUB167	AUB169	AUB182	AUB184	AUA83	AUB83		AUA100	AUA101	AUA102	*AUA103	AUA104	AUA100	AUA101.	AUA102	*AUA103	AUA104
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						Transfer mounting studs	ar unions	r banjos		Transfer banjo bolts						Transfer mounting stude	r unions	r banjos				Transfer mounting studs	r unions	r banjos	Breather tube, under-floor mountings Boot-mounted installations with seal- ing tape removed		
AUA57, 157, AUB157 AUA59, 159, AUB159	AUA59, 159, AUB159	AUA152, AUB152	AUA152, AUB152	AUA157, AUB157	AUA159, AUB159	†AUA152, †52, 165, †AUB152, 165		†AUA57, †157, 173, †AUB157, 173 †Transfer banjos	AUA52, 152, AUB152	†AUA52, †152, †AUB152   Transfer			AUAS2, AUB152	AUAS7, AUB157	AUA59, AUB159	†AUA52, 65, †152, †AUB152, 165	- 	i	AUA52, 152	AUA57, 157	AUA59, 159	†AUA52, 65, †152, 165, †AUB152, 165	†AUA57, †157, 72, 172, †AUB157 †Transfer unions		AUF201, 204 Beather Boot-mou		
A A	<b>A</b>	Lucar connectors A	4	A	Α	AUA1500 mounting studs	AUC1290 unions †	AUC1833 banjos +	Lucar connectors, Pressed-steel cover- plates only Al	Lucar connectors. AUC2698 banjo bolts	Suppressor unit fitted	Short coil housing	Lucar connectors. Short coil housing Al	Short coil housing Al	Short coil housingAl	AUA1500 mounting studs. Short coil housing	AUC1290 unions. Short coil housing	1	Lucar connectors. Barrier diaphragm. Short coil housing	Barrier diaphragm. Short coil housing   Al	Barrier diaphragm. Short coil housing Al	AUA1500 mounting studs, Barrier diaphragm, Short coil housing	AUC1290 unions, Barrier diaphragm. Short coil housing	AUC1833 banjos. Barrier diaphragm. Short coil housing	Banjo nozzles. Sealed cover	Banjo nozzles, breather tube, and valve	No drain hole, open end cover
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2 42	72	12	12	12	24	12	12	12	5	12	7,	24	4	12	74	12	12	. 12	12	17	24	2	12	12	.12	5	12
AUA32	AUA47	AUA52	AUA53	*AUA57	AUA59	AUA65	AUA72	AUA73	AUA80	AUA81	AUA105	AUA106	AUA152	AUA157	AUA159	AUA165	AUA172	AUA173	AUB152	AUB157	AUB159	AUB165	AUB172	AU3173	AUF200	AUF201	AUF204

Note:—With boot-mounted pumps not fitted with a ventilating valve it is advantageous to remove the end-cover sealing tape to allow additional breathing.

\*Basic pump.

L=Low pressure. H=High pressure. D=Double. S=Single. C=Condenser.

Reposition nozzles Reposition nozzles Reposition nozzles		Change over nozzles Change over nozzles	
AUF204		AUF402AUF400	AUF503 AUF503 AUF503
Sealed cover, breather tube, and valve AUF204	Sealed air bottle Mechanical flow smoother Mechanical flow smoother	Sealed cover breather tube and valve, mechanical flow smoother sasic Hovercraft Ltd.	Sealed air bottle Sealed air bottle Sealed air bottle Sealed air bottle
	υυυ	υυυ	0000
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TTII	TIT	I II	TTTT
2 2 2 2	t t 2	27 27 27	2 2 2 2
AUF206 AUF207 AUF208 AUF209	AUF300 AUF301 AUF302	AUF400 AUF402 AUF403	AUF500 AUF501 AUF502 AUF503
	BANGE RANGE	MOI BANGE	MO BANGE

### DAL (EARLIER MODELS)

AUMA         12         L         D         ER         AUMA11,48         Plus special Rolls-Royce bracter           AUMA1         12         L         Yo         ER         AUMA11,48         Plus special Rolls-Royce bracter           AUMA1         12         L         Yo         ER         AUMA14,48         Convert to ER           AUMA1         12         L         D         ER         Twin all bottles         Original repaired only           AUMA2         12         H         D         ER         AUMA1969 state, AUMA700 and 4701         AUMA146, 140, 11	Pump No.	Volt	Pres.	Cont.	Pole	Condenser	Special features	Alternatives	REMARKS
12         L         D         ER         AUA48           12         L         D         ER         Twin air boxtles         AUA48           12         H         D         ER         Twin air boxtles         AUA469 studs. AUA770 and 770           12         H         D         ER         AUA469 studs. AUA770 and 770         AUA446, 160, 1146, 1AUB146           12         H         D         ER         AUA469 studs. AUA770 and 770         AUA446, 160, 1146, 1AUB146           12         H         D         ER         AUA46, AUB146         AUA46, AUB146           12         H         D         ER         AUA46, AUB146         AUA46, AUB146           12         H         D         ER         AUA46, AUB146         AUA46, AUB146           12         H         D         ER         C         AUA46, AUB146 <td>JA8</td> <td>12</td> <td>_</td> <td>Ω</td> <td>띪</td> <td></td> <td></td> <td>AUA11, 48</td> <td>Plus special Rolls-Royce bracket</td>	JA8	12	_	Ω	띪			AUA11, 48	Plus special Rolls-Royce bracket
12         L         D         ER         Twin air bottles         AUA/699 studs. AUA/700 and 1701           12         H         D         ER         Twin air bottles         AUA/699 studs. AUA/700 and 1701           12         H         D         ER         AUA/699 studs. AUA/700 and 1701         AUA/46, 160, 1146, 1AUB146           12         H         D         ER         LCS-special body         AUA/46, 160, 1146, 1AUB146           12         H         D         ER         AUA/1290 unions         AUA/46, AUB146           12         H         D         ER         C         AUA	1A10	12		Δ	۵			AUA11, 48	Convert to ER
12	A11	12	ر	Ą.	盟			AUA48	
12	A14	12	-	۵	#				Original repaired only
12	A16	12	I	۵	<b>£</b>		Twin air bottles	10	Original repaired only
12         H         D         ER         AUA/44, ¡60, †146, †AUB146         †Remove studs           12         H         D         ER         LCS—special body         AUA61         AUA64	A19	12	Ξ	۵	黑		AUA1699 studs. AUA1700 and 1701 outlet/inlet unions	AUA†46, †60, †146, †AUB146	Transfer studs and unions
12         H         D         ER         LCS—special body         AUA446, AUB146         Original repaired only           12         H         D         ER         AUG1290 unions         AUA46, AUB146         Rolls-Royce           12         H         D         ER         AUG1290 unions         AUA46, 1461, AUB161         Rolls-Royce           12         H         D         ER         C         AUA46, AUB161         Remove studs           12         H         D         ER         C         AUA46, AUB146         Remove studs           12         H         D         ER         C         AUA46, AUB146         Remove studs           12         H         D         ER         C         AUA46, AUB146         Remove studs           12         H         D         ER         C         AUA46, AUB146         Remove studs           12         H         D         ER         C         AUA46, AUB146         Remove studs           12         H         D         ER         C         AUA46         AUA46           12         H         D         ER         C         AUA46         AUA46	A20	12	I	۵	Æ		***************************************	AUA†46, †60, †146, †AUB146	†Remove studs
12         H         D         ER         LCS—special body           12         L         D         ER         AUC1290 unions           12         H         D         ER         AUC1290 unions           12         H         D         ER         AUA44, AUB146           12         H         D         ER         AUA46,          12         H         D         ER         AUA46	A28.	12	1:	Ω	Æ			AUA61	
12 H D ER AUC1290 unions 12 H D ER AUC1290 unions 12 H D ER AUC1290 unions 12 H D ER AUA146, 140, 140, 140, 140, 140, 140, 140, 140	A30	12	Н	۵	쫎		LCS—special body	:	Original repaired only
12 L D ER AUC1290 unions 12 H D ER AUC1290 unions 12 H D ER AUA61, 161, AUB161 12 H D ER C 13 H D ER C 14 H D ER C 15 H D ER C 16 H D ER AUA66, AUB146 17 H D ER C 18 H D ER C 19 H D ER C 10 H D ER AUA61, AUB161 11 H D ER C 12 H D ER C 13 H D ER C 14 H D ER AUA61, AUB161 15 H D ER C 16 H D ER AUA61, AUB161 16 H D ER AUA61, AUB161	A46	12	I.	Δ	æ			AUA146, AUB146	Rolls-Royce
12 H D ER AUA61, 161, AUB161 12 H D ER C AUA66, 7146, 740B161 12 H D ER C AUA66, AUB161 12 H D ER C AUA66, AUB146 12 H D ER C AUA66, AUB146 12 H D ER C AUA66, AUB146 12 H D ER C AUA66, AUB161 12 H D ER C AUA66, AUB161 12 H D ER C AUA61, AUB161 12 H D ER C AUA61, AUB161	A48	. 12		۵	Ä		AUC1290 unions		
12 H D ER AUA46, 7146, 740B146	A55	42	#	Δ	ER			AUA61, 161, AUB161	
12 H D ER C 12 L D ER C 12 H D ER 12 H D ER 12 H D ER 13 H D ER 14 H D ER 15 H D ER 16 H D ER 17 H D ER 18 C 19 H D ER 19 H D ER 10 H D ER 11 H D ER 11 H D ER 12 H D ER 13 H D ER 14 H D ER 15 H D ER 16 H D ER 17 H D ER 18 H D ER 19 H D ER 19 H D ER 19 H D ER 10 H D ER	460	42	r	۵	띪			+AUA46, †146, †AUB146	+Remove studs
12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	191	12	T	۵	Ħ			AUA161, AUB161	
12 L D ER 12 H D D ER C C ER C C	.62	12	H	۵	Œ	U			and the second s
12 H D ER C C T H D ER C C C C C C C C C C C C C C C C C C	98	12	1	۵ :	æ				
12 H D ER C C ER C	1146	12	Ξ	Δ	띪			AUA46, AUB146	
12 H D ER C 12 H D ER C	146	12	r	Δ	H			AUA46	
12 H D ER ER	149	. 12	I	۵	ER	Ų			
12 H D ER	1161	12	I	Δ	Æ			AUA61, AUB161	
	1161	4	I	Δ	E	41		AUA61	
					9				
	2 -						2		

\*Basic pump.

End cover colours: 6-volt Brown. 12-volt Black. 24-volt Blue. L=Low pressure. H=High pressure. D=Double. S=Single. C=Condenser.

AUTHORIZED	DISTRIBUTO	OR:		- 1			
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THE



# PUMP TYPE/CAR MODEL REFERENCE LIST

MANUFACTURED

by

#### THE S.U. CARBURETTER COMPANY LIMITED

WOOD LANE

**ERDINGTON** 

**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines) TELEGRAMS: CARBURFLEX, BIRMINGHAM
TELEX: 338342



S.U. SERVICE SHEET No. AKD 4813 B

THE BRITISH MOTOR CORPORATION LIMITED, 1966

					Γ.	PUI	MP	
		CAR MODEL			YEAR	SPEC.	ALT.	REMARKS
A.C.			*!		Accompany of the	2000 00 00 + 000		
16.56-h.p.	6-cyl.		• • •		1952/9	AUA 50		
	4650		9			14 9		i la
ALVIS	3.00	- 10 m						
All models		A Assert Control		diavi	1933/50	AUA 25	100	
All Illoudis				••	1755,50	7.07.25	420	
							10	
ASTON M	ARTIN							
All models					1933/7	AUA 25	16.	
All models					1949/50	AUA 25		
2.5-litre	6-cyl.	DB2			1950/3	AUA 11	AUF 406	
2·5-litre	6-cyl.	Verter			1951/4	AUA 11	AUF 406	
2·5-litre	6-cyl.	DOME AND IN			1953/4	AUA 11	AUF 406	
3-litre	6-cyl.	DD011 11 11 11			1954/5	AUA 11	AUF 406	
3-litre	6-cyl.				1955/6	AUA 11	AUF 406	
3-litre	6-cyl.				1957/9	AUA 11	AUF 406	
3-litre					1958/9	AUA 11	AUF 406	
3.7-litre	6-cyl.				1958	AUA 61	AUF 406	
3.7-litre	6-cyl.	DD4			1960	AUA 61	AUF 406	-
3-7-litre	6-cyl.	554			1961/2	AUA 161	AUF 406	
3-7-litre	6-cyl.	DD46:	• ••		1961/2	AUA 161	AUF 406	
3-7-litre	6-cyl.	The Control of the Co	• ••	••	1962/4	AUB 161	AUF 406	
4-litre	6-cyl.	DDC		• •	1965/6	AUF 402	AUI 400	
4-litre	o-cyi.	DB6	•		1703/0	AUI 102		
	50	- 10						
AUSTIN			* = 5	14				
1200-c.c.	4-cyl.	Austin-Healey 100 .			1953/6	AUA 50		
1200-0,0.	4-cyl.	Austin-Healey Le Mans .		•••	1954/6	AUA 50		
	4-cyl.			••	1955	AUA 50		
	6-cyl.	Austin-Healey		••	1957	AUA 56		1
	6-cyl.		• ••	••	1957/61	AUA 65	AUF 303	For Service purposes
2·6-litre		Princess DM4 Austin-Healey BN6 3000 (	MI. 1\	••	1959	AUA 72	AUF 303	see sheet AUA 212 B
2.6-litre	6-cyl.	A99	(MK. I)	••		AUA 103 or	AUF 303	See sheet AUA 212 B
	6-cyl.	A97	• • • • • • • • • • • • • • • • • • • •	••	1959/61		ALIC 204	4.5
		<b>6</b>			4000	AUA 83	AUF 204	200
		Seven		••	1959	AUA 103	AUF 201	12.
		Austin-Healey BN7 .			1959	AUA 72	AUF 303	
	4-cyl.	A55, .	•••		1959	AUA 103	AUF 204	
		Austin-Healey BN7 .			1959	AUA 72	AUF 303	1
		Austin Healey BN7 (RC)		••	1960	AUA 72	AUF 303	
	3	Austin-Healey BN7 (Mk.	il)	••	1961/2	AUA 72	AUF 303	
		Seven & Super			1961/2	AUA 83	AUF 201	, .
997-c.c.	4-cyl.	Mini Cooper	,	••	1961/2	AUA 83	AUF 201	
1622-c.c.	4-cyl.	A60		• •	1961/4	AUA 83	AUF 204	301
	4-cyl.	A40 (Mk. II)	,	• • •	1961/2	AUA 83	AUF 204	
×.	6-cyl.	A110 Westminster H.C. 8	& L.C.	• •	1961/3	AUA 83	AUF 204	
1098-c.c.	4-cyl.	- 100 th she in the control in the C		• •	1962/3	AUF 206	AUF 201	24
1098-c.c.	4-cyl.				1963/4	AUF 206	AUF 201	1.0
	6-cyl.				1962/3	AUA 173	AUF 303	
1098-c.c.	4-cyl.				1962/4	AUB 83	AUF 204	
1070-c.c.	4-cyl.	[2] (1 - 1) (1 - 1) - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			1963/4	AUB 83	AUF 201	
1275-c.c.	4-cyl.			•••	1964	AUF 201	80	
970-c.c.	4-cyl.	Mini-Cooper 'S'			1964	AUF 201		
998-c.c.	4-cyl.	Mini-Cooper			1964	AUF 201		
1800-c,c.	4-cyl.	A 4000			1964/6	AUF 209	AUF 201	40 (88) (B)
850-c.c.	•	A35 Van			1965/6			6.0
850-c.c.		MI-1 /A:			1965/6	AUF 201		
1098-c.c.		1100 (Automatic)			1965/6	AUF 204		
			0.5150	1000	September 1987			1

All mod All mo	dels dels dels dels dels dels dels dels	S2' Silver Cloud and I V' Eight  V' Eight  SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS	Phantom V r and Majestic r and Majestic	c	YEAR  1934/5 1938/59 1960/2 1962/4 1965/6 1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1965/6 1936/48	AUA 8 AUA 19 AUA 46 AUA 146 or AUA 149 AUF 400  AUA 52 AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161  AUF 207 AUF 207 AUF 207	AUF 406 AUF 406 AUF 406 AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	REMARKS
All mod All mo	dels dels dels dels dels dels dels dels	S2' Silver Cloud and I V' Eight  V' Eight  SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS	r and Majesti r and Majesti r	c	1938/59 1960/2 1962/4 1965/6 1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 19 AUA 46 AUA 146 or AUA 149 AUF 400 AUA 52 AUA 52 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 406  AUF 303  AUF 303  AUF 406  AUF 406  AUF 406  AUF 406	
All mod All mo	dels dels dels dels dels dels dels dels	S2' Silver Cloud and I V' Eight  V' Eight  SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS	r and Majesti r and Majesti r	c	1938/59 1960/2 1962/4 1965/6 1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 19 AUA 46 AUA 146 or AUA 149 AUF 400 AUA 52 AUA 52 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 406  AUF 303  AUF 303  AUF 406  AUF 406  AUF 406  AUF 406	
All mod 4½-litre  2½-litre  2½-litre  2½-litre  1098-c. 1098-c	dels  LER  COCENTI  C.  C.  C.  JAR AND  dels  dels  dels	S2' Silver Cloud and I V' Eight  V' Eight  SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS	r and Majesti r and Majesti r	c	1938/59 1960/2 1962/4 1965/6 1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 19 AUA 46 AUA 146 or AUA 149 AUF 400 AUA 52 AUA 52 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 406  AUF 303  AUF 303  AUF 406  AUF 406  AUF 406  AUF 406	
All mod All mo	ILER  DCENTI  C.  C.  JAR AND  dels  dels  dels	S2' Silver Cloud and In V' Eight  V' Eight  SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 1100 1M3 1M3 1K4	r and Majesti r and Majesti r	c	1960/2 1962/4 1965/6 1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 46 AUA 146 or AUA 149 AUF 400 AUA 52 AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 303 AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
DAIM! 4½-litre 2½-litre 4½-litre 1098-c. 1098-c. 1098-c. JAGU All mod All mod 3-8-litre 3-8-litre 2-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	CENTI C. C. C. JAR AND dels dels dels	V' Eight  V' Eight  SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS  Mk. X	r and Majesti r and Majesti r	c	1962/4 1965/6 1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964 1964	AUA 146 or AUA 149 AUF 400 AUA 52 AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 303 AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
4½-litre  2½-litre  2½-litre  4½-litre  4½-litre  4½-litre  1098-c.  1098-c	DCENTI .ccd. JAR AND dels dels dels	SP250 Sports SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS  Mk. X	r and Majesti	c	1965/6 1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	Or AUA 149 AUF 400 AUA 52 AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 303 AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
4½-litre  2½-litre  2½-litre  4½-litre  4½-litre  4½-litre  1098-c.  1098-c	DCENTI c. c. c.	SP250 Sports SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS  Mk. X	r and Majesti	c	1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUF 400  AUA 52  AUA 52  AUA 161  AUB 152  AUA 161  AUF 303  AUA 161  AUF 201  AUF 207  AUF 207  AUF 207	AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
4½-litre  2½-litre  2½-litre  4½-litre  4½-litre  4½-litre  1098-c.  1098-c	DCENTI c. c. c.	SP250 Sports SP250 Sports SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS  Mk. X	r and Majesti	c	1959 1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 52 AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
4½-litre  2½-litre  2½-litre  4½-litre  4½-litre  4½-litre  1098-c.  1098-c	DCENTI .ccc. dels dels dels	SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS Mk. X	r and Majesti	c	1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
4½-litre  2½-litre  2½-litre  4½-litre  4½-litre  4½-litre  1098-c.  1098-c	DCENTI .ccc. dels dels dels	SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS Mk. X	r and Majesti	c	1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
2½-litre 2½-litre 4½-litre 4½-litre 1098-c. 10	DCENTI .ccc. dels dels dels	SP250 Sports Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS Mk. X	r and Majesti	c	1960/1 1960/2 1962/3 1964 1964 1964 1964 1964 1964 1964	AUA 52 AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 303 AUF 406 AUF 303 AUF 406 AUF 406	
2½-litre 4½-litre 1NNO 1098-c.	DCENTI .ccc. dels dels dels	Majestic Major Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS Mk. X	r and Majesti	c	1960/2 1962/3 1964 1964 1964 1963/4 1964 1964 1965/6	AUA 161 AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 207	AUF 406 AUF 303 AUF 406 AUF 406	
2½-litre 4½-litre 1NNO 1098-c.	DCENTI .ccc. dels dels dels	Saloon Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS Mk. X	r and Majesti		1962/3 1964 1964 1964 1963/4 1964 1964 1965/6	AUB 152 AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 201	AUF 406 AUF 406 AUF 204	
2½-litre 4½-litre 1NNO 1098-c.	DCENTI .ccc. dels dels dels	Majestic Major Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS Mk. X	r	c	1964 1964 1964 1964 1964 1964 1965/6	AUA 161 AUF 303 AUA 161 AUF 201 AUF 207 AUF 207 AUF 201	AUF 406 AUF 204	
JAGU All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod	DCENTI .cccddels .dels .dels .dels	Saloon Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS Mk. X	r		1964 1964 1963/4 1964 1964 1965/6	AUF 201 AUF 207 AUF 207 AUF 207 AUF 207	AUF 406	
JAGU All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod	DCENTI .cccddels .dels .dels .dels	Majestic Major  1M3 1100 1M3 4-cyl. Mini-Minor  SS	r		1964 1963/4 1964 1964 1965/6	AUA 161 AUF 201 AUF 207 AUF 207 AUF 201	AUF 204	
JAGU All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod	CENTI c. c. c. de. dels dels dels	1M3 1100 1M3 4-cyl. Mini-Minor SS			1963/4 1964 1964 1965/6	AUF 201 AUF 207 AUF 207 AUF 201	AUF 204	
JAGU All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod	C. C. C. C. C. C. C. C. C. C. C. C. C. C	1100 1M3 4-cyl. Mini-Minor SS			1964 1964 1965/6	AUF 207 AUF 207 AUF 201		
JAGU All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod All mod	C. C. C. C. C. C. C. C. C. C. C. C. C. C	1100 1M3 4-cyl. Mini-Minor SS			1964 1964 1965/6	AUF 207 AUF 207 AUF 201		
JAGU All mod All mod 3-8-litro 3-8-litro 4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	JAR AND dels dels dels	1100 1M3 4-cyl. Mini-Minor SS			1964 1964 1965/6	AUF 207 AUF 207 AUF 201		
JAGU All mod All mod 3-8-litro 3-8-litro 4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	JAR AND dels dels dels	1M3 4-cyl. Mini-Minor SS		• • •	1964 1965/6	AUF 207 AUF 201		
JAGU All mod All mod 3-8-litro 3-8-litro 3-8-litro CTyp Mk. 10 LAGO All mod All mod LEA-F All mod All mod Magnet	JAR AND dels dels dels	4-cyl. Mini-Minor  SS			1965/6	AUF 201	AGF 204	
All mod All mo	JAR AND dels dels dels	ss		•		200		
All mod All mo	dels . dels . dels .	Mk. X			1934/49			
All mod All mo	dels . dels . dels .	Mk. X		1	1934/49	1	1	
All mod All mo	dels . dels .	Mk. X		•••		AUA 25		
All mod 3-8-litre 3-8-litre 3-8-litre 3-8-litre 4-10 4-10 4-10 4-10 4-10 4-10 4-10 4-10	dels .	 Mk. X			1948/57	AUA 57	AUF 301	
3-8-litro 3-8-litro 3-8-litro 4E' Typ Mk. 10 LAGO All mod All mod M.G. All mod Magnet	•	Mk. X			1958/63	AUA 52	AUF 301	
3-8-litro 3-8-litro 4E' Typ Mk. 10 LAGO All mod All mod M.G. All mod Magnet			- 100 Tel		1963/4	AUF 301	A01 301	
3-8-litre 'E' Typ Mk. 10 LAGO All mod All mod LEA-F All mod All mod M.G. All mod Magnet	A	'S' type Mk. III	18 · 1 and 9 ·	1 C.R. (nan	er	7.01 301	į.	1.
3-8-litro 'E' Typ Mk. 10 LAGO All mod All mod M.G. All mod Magnet	Ť	cleaner)		, Citti (pup	1964	AUF 301		
3-8-litro 'E' Typ Mk. 10 LAGO All mod All mod M.G. All mod Magnet	- 0	'S' type Mk. III	8 · 1 and 9 · 1	CR foll ha		701301		
E' Typ Mk. 10 LAGO All mod All mod LEA-F All mod All mod M.G. All mod Magnet	Ĭ.	cleaner)		on it tou	1964	AUF 301		
E' Typ Mk. 10 LAGO All mod All mod LEA-F All mod All mod M.G. All mod Magnet	e	7:1 C.R. (Cod		)	1964	AUF 301		
Mk. 10  LAGO All mod All mod LEA-F All mod M.G. All mod Magnet					. 1965	AUF 301		
LAGO All mod All mod LEA-F All mod M.G. All mod All mod Magnet			••		. 1965	Pr. AUF 301		
LEA-F All mod M.G. All mod All mod Magnet						1		
LEA-F All mod M.G. All mod All mod Magnet	NDA	E <sup>2</sup>					20	
M.G. All mod All mod Magnet	dels .			,	1929/39	AUA 11	AUF 406	
M.G. All mod All mod Magnet					1939/53	AUA 55	AUF 406	
M.G. All mod All mod Magnet								
M.G. All mod All mod Magnet	RANCIS			31 - 32				1
M.G. All mod All mod Magnet					1938/50	AUA 25	F-155	
All mod All mod Magnet			1	5.61 935		1	28	
All mod All mod Magnet							100	
All mod Magnet	dels .	(30.50 )		1	1930/53	AUA 25		
Magnet					1954/8	AUA 54		
				3 144 1000	1959/61	AUA 103	AUF 204	
1588-c.		'A' (Mks. I & I	n)		1959/62	AUA 54		
1622-c.		Magnette (Mk.			1961/3	AUA 83	AUF 204	
		1100	,		1962/3	AUB 83	AUF 201	
1800-c.	.c.	'MGB'			1962/3	AUA 150	AUF 303	
	7.0	'MGB' Compe			1963/4	AUA 150	AUF 303	940
	A A	'MGB'			1964	AUA 150	AUF 303	
1098-c.		Midget Mk. II			1964	AUF 206	AUF 201	
	.c.	. 110000 1 1111 11					7.01 AVI	
MORE	.c.	- 10 m		19				1 '
		8-h.p.)			1933/54	AUA 25		
	RIS				1933/47	AUA 26	-	,
	RIS dels (excep				1948/57	AUA 25		
	RIS dels (excep models .				1958/59	AUA 66		See sheet AUA 212 B
	RIS dels (excep models models			Face Market 1		10000		See sliedt AUA 212 B
	RIS dels (excep models .					<u> </u>	Accompany of the State of the S	<del></del>

	The state of the s			PU	MP	
	CAR MODEL		YEAR	SPEC.	ALT.	REMARKS
Morris-continued			1		\	
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All models (except Minor)			1955/57	AUA 54	1 1 1 1 1 1 1 1	
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1ini-Minor			1959	AUA 103	AUF 201	
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	Mini-Minor			AUA 103	AUF 201	
	Minor 1000		1960/2	AUA 66		
	Mini-Cooper		1961/2	AUA 83	AUF 201	
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	1100			AUA 83	AUF 201	
	Minor		1962/3	AUA 66		5.1
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	High performance 12-litre		1952	AUA 25		
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098-c.c.	Princess 1100		1964	AUF 207	AUF 204		
litre	Princess R		1964/6	AUF 400			
litre	Princess Limousine		1956/64	AUA 165	AUF 303		
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4-cyl.	Hornet		1961/2	AUA 83	AUF 201		
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# RECOMMENDED MOUNTING POSITIONS

TYPES L, DUAL L, HP, DUAL HP, LCS, and DOUBLE ENTRY AUF 200, AUF 300, AUF 400, AUF 500 RANGES

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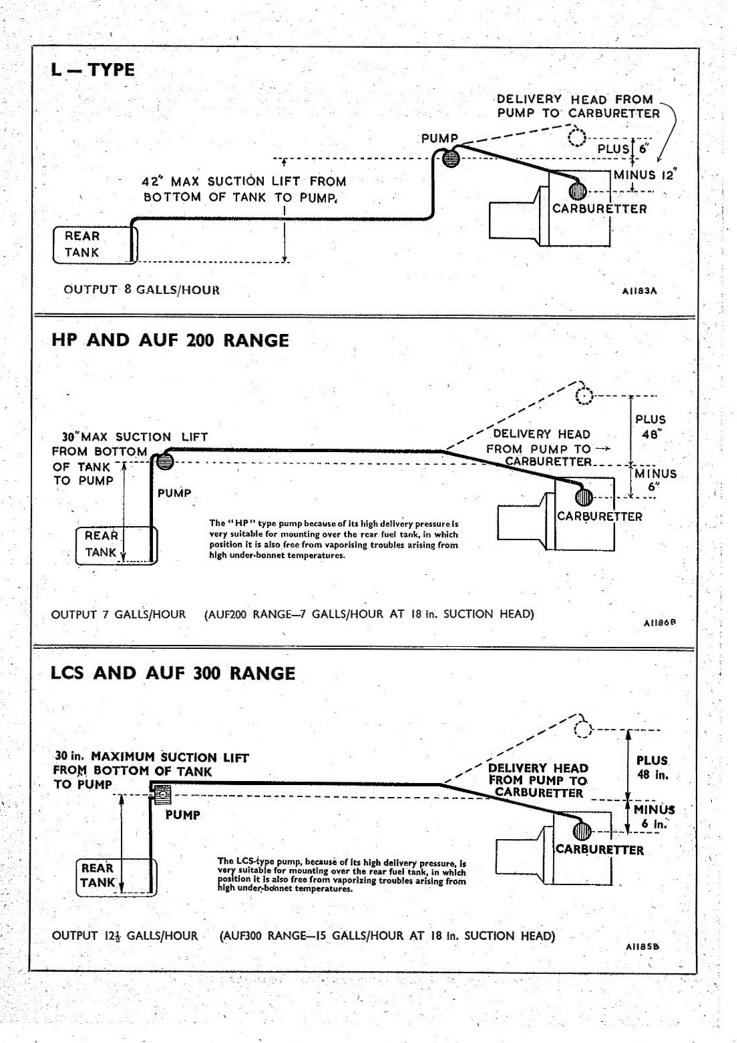
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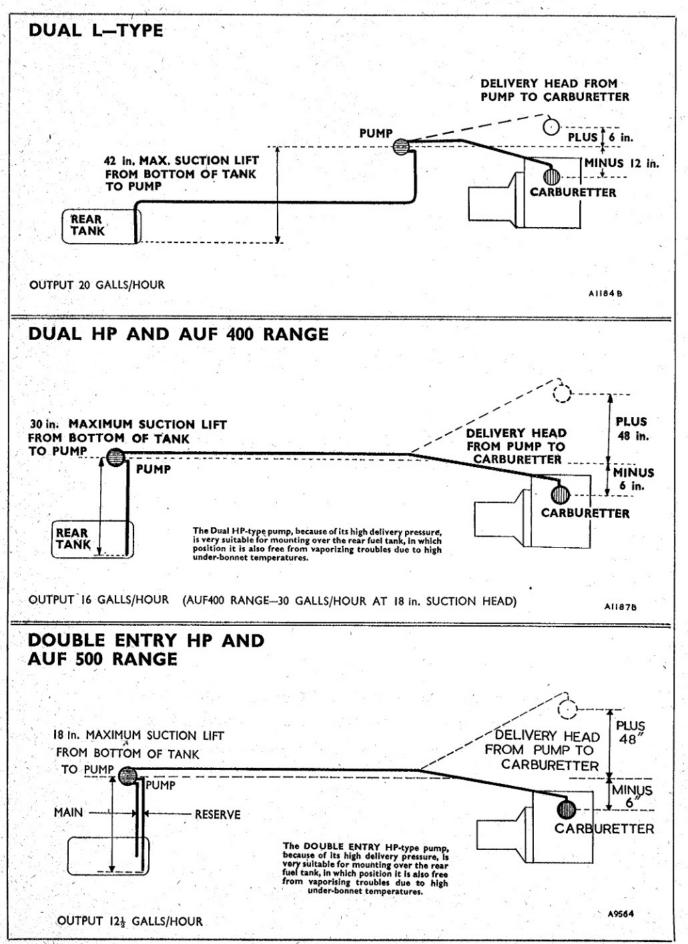


S.U. Service Sheet No. AUA 216 B

THE BRITISH MOTOR CORPORATION LIMITED 1967

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SEE NOTES ON BACK PAGE

#### NOTES

When hill-climbing, the 'Suction Lift' and 'Delivery Head' are increased, depending on the severity of the gradient, and also on the distance between the tank and pump and the pump and carburetter; this potential increase in suction lift and delivery head must be included in the overall installation figure, and it is advisable to allow for a maximum gradient of 1 in 4.

If the pump is mounted under the bonnet, keep it well away from radiated exhaust heat, and preferably in the coolest location, and also take similar care with the fuel pipe lines.

All pumps should be mounted with the filter plugs or filter lids in the bottom or 6 o'clock position.

The 'Single' pumps, both L and HP, use 4 outside diameter fuel pipes, whilst the 'Duals', both L and HP, and also the LCS, use 4 outside diameter pipe.

An earthing terminal is provided on all pumps and it is essential that this connection is effective.

N.B. For pump identification see leaflet AKD 4812 B.

AUTHORIZED DISTRIBUTOR



# L and HP single

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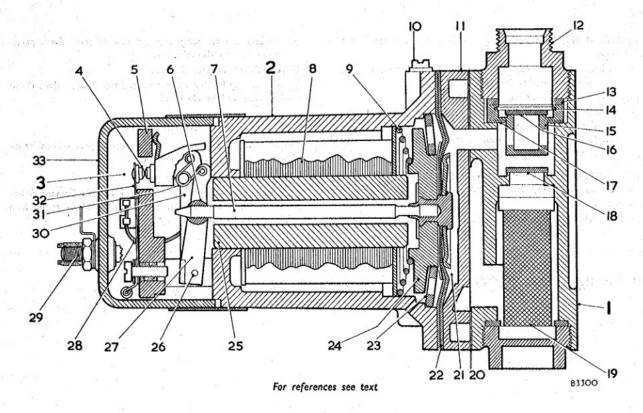
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S.U. SERVICE SHEET No. AUA 200 A

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#### INSTALLATION

The 'L' type pump should be mounted in the region of the engine, at approximately carburetter level, in such a position that a minimum of exhaust manifold heat is radiated upon it, with the delivery pipe to the float chamber kept as short as possible.

The 'HP' type pump, because of its high delivery pressure, is suitable for mounting over the rear fuel tank, in which position it is free from vaporizing troubles arising from high underbonnet temperatures.

On both pumps, the filter plug should be positioned at the bottom and the delivery union at the top.

NOTE.—Earlier 'HP' pumps were fitted with a coil housing of about 13 in. greater length than 'L' type pumps; on current production the housing length is the same. On later 'HP' pumps the earthing screw has been reduced in size from 2 B.A. to 4 B.A., thus an 'L' type can be identified by the 2 B.A. earthing screw.

Additionally, 'L' type pumps are normally fitted with a singlepoint contact blade.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

#### DESCRIPTION

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature and magnet assembly (2), and the contact breaker assembly (3).

#### The body

A

This consists of the main body casting and a sandwich plate (11) which is assembled to it with a joint gasket (20). A filter (19) is screwed into the lower part of the body, and the inlet union, unseen in the diagram, is screwed in at an angle on one side. The outlet union (12) is screwed in to the top of the body, opposite to the filter, and tightens down on to the delivery valve cage (15), which is clamped between two fibre washers, (17) thin and (13) medium. In the top of the cage is the outlet valve,

a thin brass disc (16) held in position by a spring clip (14). The inlet valve (18), a similar brass disc, rests on a seating machined in the body.

A series of holes connect the space between the valves to the pumping chamber (21), which is a shallow depression on the forward face of the sandwich plate, bounded by the diaphragm (22).

#### The diaphragm, armature, and magnet assembly

The diaphragm (22) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the iron armature (24). The armature spindle (7) passes freely through the magnet core (25) and is screwed into a trunnion (6) carried by the inner rocker (27). Eleven spherically-edged rollers (23) are fitted between the coil housing and the armature; these centralize the armature in the housing and allow freedom of movement in a longitudinal direction.

#### The contact breaker assembly

This consists of a bakelite pedestal moulding (5) which carries two rockers, outer (30) and inner (27), both hinged to the moulding at one end by the rocker spindle (26), and interconnected at their top ends by two small toggle springs (31) arranged to give a 'throw-over' action. The inner rocker, as mentioned, carries a trunnion into which the armature spindle is screwed. The outer rocker (30) is fitted with one or two tungsten points (4) which contact other tungsten points carried by the spring blade (32). One end of the coil (8) is connected electrically to the spring blade and the other end is connected to the terminal stud (29). A short length of flexible wire (28) connects the outer rocker to one of the screws securing the pedestal moulding to the coil housing, thus providing an earth return. This must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw (10). A non-return valve may be fitted to the end-cover moulding (33) to aid the circulation of air through the contact-breaker chamber. A condenser may be fitted in a wire clip to one of the pedestal retaining screws, the tag from it being secured under the contact blade attachment screw.

#### ACTION OF THE PUMP

When the pump is at rest the outer rocker (30) lies in the position illustrated and the tungsten points (4) make contact. When switched on, current passes from the terminal stud (29) through the coll, back to the spring blade (32), through the points, and so to earth, thus energizing the coil and attracting the armature (24). The armature, together with the diaphragm assembly, moves towards the coil against pressure from the armature spring (9), drawing fuel through the inlet valve into the pumping chamber (21). When the armature has travelled well towards the end of its stroke the 'throw-over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coil under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coll, the 'throw-over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

#### DIAPHRAGM AND CONTACT-BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

#### Diaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion (6). This is done as follows:

- On modified rocker assemblies set the two stop fingers as described under the heading 'Contact breaker'.
- (2) Slacken the screw securing the contact blade (32) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coil housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw-over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the rocker 'throw-over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned, as the outer rocker operates to make or break the contacts, one pair of points wipes over the centre-line of the other in a symmetrical manner.

#### Contact breaker

Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

(identified by stop fingers fitted to outer rockers.) Check the lift of the blade tip above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of  $0.035\pm0.05$  in.  $(.9\pm0.35\pm0.05)$  mm.).

Check the gap between the rocker finger and coll housing with a feeler gauge, bending the stop finger, if necessary, to obtain a gap of  $\cdot 070 \pm \cdot 005$  in. (1.8 $\pm \cdot 13$  mm.).

#### Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a .030 in. (8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

#### **FAULT DIAGNOSIS**

#### 1. Suspected fuel feed failure

Disconnect the fuel line at the carburetter and check for flow.

- (a) If normal, examine for obstructed float-chamber needle seating or gummed needle.
- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve cage sealing washers.

#### (d) If no flow, check for:

(i) Electrical supply

Disconnect the lead from the terminal and testfor an electrical supply.

(ii) Faulty contact points

if electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) Faulty diaphragm action

If the previous operations fall to locate the trouble, stiffening of the diaphragm fabric or abnormal friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where they pivot in the brass rockers. The diaphragm armature assembly should then be assembled and set in accordance with the instructions given under that heading.

#### 2. Nolsy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak.

The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight.
- (c) Check that the coil housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

(a) A serious air leak on the suction side, or,

(b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

#### GUARANTEE

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical information contained in this Service Sheet supersedes any previous instructions published or authorized on this subject by the Company.

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# Туре LCS

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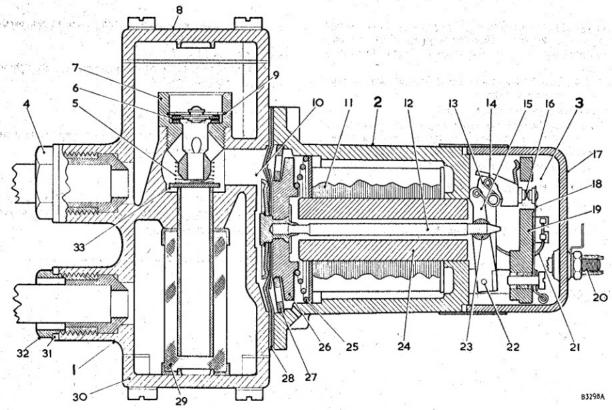
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SECTION AND CONTRACTOR OF SECTION



For references see text

#### INSTALLATION

The 'LCS' type pump can be mounted at any point between the region of the carburetter and the region of the rear tank. In the vertical plane it should be level, with or just below, the carburetter, the pipe lines being kept as short as possible. The pump should not be exposed to heat radiation from exhaust manifolds.

On later pumps a rubber sealing ring (31) has been introduced for fitment to the inlet and outlet unions before they are screwed into the body; this prevents the ingress of water, particularly when the pump is fitted on an exposed part of the chassis.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

#### DESCRIPTION

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature and magnet assembly (2), and the contact breaker assembly (3).

#### The body

The body (1) is an aluminium die casting to which is fitted a top and lower lid (8) and (30); these are secured by 2 B.A. screws. The lower lid retains the filter (29) and the top lid gives access to the outlet valve cage (7), which is screwed into the body casting. On later pumps the outlet valve (6) is a riveted assembly comprising a brass seating, a light spring, and a thin plastic valve disc with a spring clip (9) retaining the valve on a cork washer in the valve cage. The inlet valve (33) is a plain brass disc which is held on a seating formed in the body casting by a light spring (5), retained by the outlet valve cage. On earlier pumps the outlet valve is a plain brass disc held into the outlet valve cage by a spring clip; the inlet valve is also a brass disc on a seating formed in the body casting but no spring

is fitted. An inlet and outlet connection (32) and (4) respectively are provided on the side of the body casting.

The space between the valves on both types is connected to the pumping chamber (10), formed by a shallow depression in the face of the body casting and bounded by the diaphragm (28).

#### The diaphragm, armature, and magnet assembly

The diaphragm (28) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the iron armature (26). The armature spindle (12) passes freely through the magnet core (24) and is screwed into a trunnlon (23) carried by the inner rocker (15). Eleven spherically-edged rollers (27) are fitted between the coil housing and the armature; these centralize the armature in the housing and allow freedom of movement in a longitudinal direction.

#### The contact breaker assembly

This consists of a bakelite pedestal moulding (19) which carries two rockers, outer (14) and inner (15), both hinged to the moulding at one end by the rocker spindle (22), and interconnected at their top ends by two small toggle springs (13) arranged to give a 'throw-over' action. The inner rocker, as mentioned, carries a trunnion into which the armature spindle is screwed. The outer rocker (14) is fitted with one or two tungsten points (16) which contact other tungsten points carried by the spring blade (18). One end of the coil (11) is connected electrically to the spring blade and the other end is connected to the terminal stud (20). A short length of flexible wire (21) connects the outer rocker to one of the screws securing the pedestal moulding to the coil housing, thus providing an earth return. This must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw. A condenser may be fitted in a wire clip to one of the pedestal retaining screws, the tag from it being secured under the contact blade attachment screw. The contact breaker is contained in an end-cover moulding (17) secured to the pedestal by a nut and lock washer on the terminal stud.

#### ACTION OF THE PUMP

When the pump is at rest the outer rocker (14) lies in the position illustrated and the tungsten points (16) make contact. When switched on, current passes from the terminal stud (20) through the coil, back to the spring blade (18), through the points, and so to earth, thus energizing the coil and attracting the armature (26). The armature, together with the diaphragm assembly, moves towards the coil, against pressure from the armature spring (25), drawing fuel through the inlet valve into the pumping chamber (10). When the armature has travelled well towards the end of its stroke the 'throw-over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coll under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coil, the 'throw-over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

#### DIAPHRAGM AND CONTACT-BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

#### Diaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion (23). This is done as follows:

- (1) On modified rocker assemblies set the two stop fingers as described under the heading 'Contact breaker'.
- (2) Slacken the screw securing the contact blade (18) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coil housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw-over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the nocker 'throw-over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned, as the outer rocker operates to make or break the contacts, one pair of points wipes over the centre-line of the other in a symmetrical

#### Contact breaker

Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; overtensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

(Identified by stop fingers fitted to outer rockers.) Check the lift of the blade above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of  $0.035\pm0.05$  in.  $0.05\pm0.05$  in.

Check the gap between the rocker finger and coll housing with a feeler gauge bending the stop finger, if necessary, to obtain a gap of  $0.070\pm0.05$  in. (1.8 $\pm$  13 mm.).

#### Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a .030 in. (8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

#### **FAULT DIAGNOSIS**

#### 1. Suspected fuel feed failure

Disconnect the fuel line at the carburetter and check for flow.

- (a) If normal, examine for obstructed float-chamber needle seating or gummed needle.
- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve sealing washers.
- (d) If no flow, check for:
  - (i) Electrical supply

Disconnect the lead from the terminal and test for an electrical supply.

(ii) Faulty contact points

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) Faulty diaphragm action

If the previous operations fail to locate the trouble, stiffening of the diaphragm fabric or abnormal friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where they pivot in the brass rockers. The diaphragm armature assembly should then be assembled and set in accordance with the instructions given under that heading.

#### 2. Noisy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container

with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight.
- (c) Check that the coll housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

(a) A serious air leak on the suction side, or,

(b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

#### **GUARANTEE**

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical information contained in this Service Sheet supersedes any previous instructions published or authorized on this subject by the Company.

AUTHORIZED DISTRIBUTOR:

THE



#### PUMP

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# DESCRIPTION AND FAULT DIAGNOSIS

MANUFACTURED

THE S.U. CARBURETTER COMPANY LIMITED

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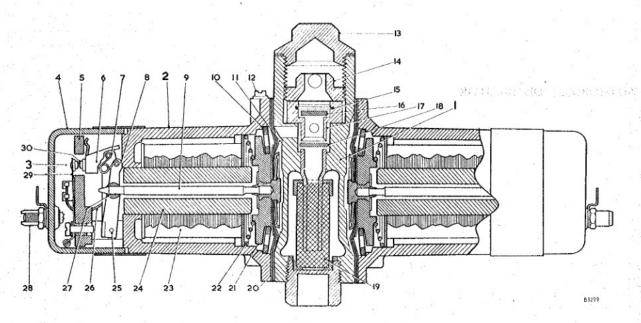
**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines)

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TELEGRAMS: CARBURFLEX, BIRMINGHAM





For references see text

#### INSTALLATION

The dual 'L' type pump should be mounted in the region of the engine at approximately carburetter level. The dual 'HP' type pump can be mounted at any point between the region of the engine and the region of the rear tank, level with, or just below, the carburetter.

Both pumps should be mounted in such a position as to avoid radiated heat from exhaust manifolds, the pipe lines being kept as short as possible. The inlet and outlet unions should point sideways in the 3 or 9 o'clock position on both pumps. Briefly, the 'HP' pump gives a higher delivery pressure, but has a slightly lower suction capacity than the 'L' type pump.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

#### DESCRIPTION

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature, and magnet assembly (2), and the contact breaker assembly (3).

#### The body

The body (1) is an aluminium casting, twin filters (19) being screwed into its lower face. The inlet and outlet unions, unseen in the diagram, are positioned on the side of the body casting. Twin hexagon-headed screw plug caps (13) give access to the valve plugs (14), which retain the outlet valve cages (17). In the top of each valve cage is the outlet valve (16), a plain brass disc, positioned smooth face downwards, and held in place by a spring clip (15). The inlet valve, (18) a similar brass disc, rests on a seating formed by the end of a brass tube in the body casting.

The spaces between the valves are connected to the pumping chambers (11), which are formed by shallow depressions in the face of the body casting and bounded by the diaphragm (20).

#### The diaphragm, armature, and magnet assembly

The diaphragm (20) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the iron armature (21). The armature spindle (9) passes freely through the magnet core (24) and is screwed into a trunnion (27) carried by the inner rocker (8). Eleven spherically-edged rollers (10) are fitted between the coil housing and the armature; these centralize the armature in the housing and allow freedom of movement in a longitudinal direction.

#### The contact breaker assembly

This consists of a bakelite pedestal moulding (5) which carries two rockers, outer (6) and inner (8), both hinged to the moulding at one end by the rocker spindle (25), and interconnected at their top ends by two small toggle springs (7) arranged to give a 'throw-over' action. The inner rocker, as mentioned, carries a trunnion into which the armature spindle is screwed. The outer rocker (6) is fitted with one or two tungsten points (30) which contact other tungsten points carried by the spring blade (29). One end of the coil (23) is connected electrically to the spring blade and the other end is connected to the terminal stud (28). A short length of flexible wire (26) connects the outer rocker to one of the screws securing the pedestal moulding to the coil housing, thus providing an earth return. This must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw. The contact breaker is contained in an end cover moulding (4) secured to the pedestal by a nut and lock washer on the terminal stud. A condenser may be fitted in a wire clip to one of the pedestal retaining screws, the tag from it being secured under the contact blade attachment screw.

#### **ACTION OF THE PUMP**

When the pump is at rest the outer rocker (6) lies in the position illustrated and the tungsten points (30) make contact. When switched on, current passes from the terminal stud (28) through the coil, back to the spring blade (29), through the points, and so to earth, thus energizing the coil and attracting the armature (21). The armature, together with the diaphragm assembly, moves towards the coil, against pressure from the armature spring (22), drawing fuel through the inlet valve into the pumping chamber (11). When the armature has travelled well towards the end of its stroke the 'throw-over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coil under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coil, the 'throw-over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

#### DIAPHRAGM AND CONTACT-BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

#### Diaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion (27). This is done as follows:

- On modified rocker assemblies set the two stop fingers as described under the heading 'Contact breaker'.
- (2) Slacken the screw securing the contact blade (29) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coil housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw-over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the rocker 'throw over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned, as the outer rocker operates to make or break the contacts, one pair of points wipes over the centre-line of the other in a symmetrical manner.

#### Contact breaker

Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

(Identified by stop fingers fitted to outer rockers). Check the lift of the blade tip above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of  $035 \pm 005$  in.  $(.9 \pm .13 \text{ mm.})$ .

Check the gap between the rocker finger and coil housing with a feeler gauge bending the stop finger, if necessary, to obtain a gap of  $.070\pm.005$  in.  $(1.8\pm.13$  mm.).

#### Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a .030 in. (.8 mm.) feeler will pass between the fibre rollers and the face of the coll housing. If necessary, the tip of the blade can be set to correct the gap.

#### FAULT DIAGNOSIS

#### 1. Suspected fuel feed failure

Disconnect the fuel line at the carburetter and check for flow.

- (a) If normal, examine for obstructed float-chamber needle seating or gummed needle.
- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the

suction side, dirt under the valves, or faulty valve sealing washers.

- (d) If no flow, check for:
  - (i) Electrical supply

Disconnect the lead from the terminal and test for an electrical supply.

(ii) Faulty contact points

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(Iv) Faulty diaphragm action

If the previous operations fall to locate the trouble, stiffening of the diaphragm fabric or abnormal friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where they pivot in the brass rockers. The diaphragm armature assembly should then be assembled and set in accordance with the instructions given under that heading.

#### 2. Noisy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight.
- (c) Check that the coil housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

- (a) A serious air leak on the suction side, or,
- (b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

#### **GUARANTEE**

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical information contained in this Service sheet supersedes any previous instructions published or authorized on this subject by the Company. THE



Type SP

## DESCRIPTION AND FAULT DIAGNOSIS

MANUFACTURED

THE S.U. CARBURETTER COMPANY LIMITED

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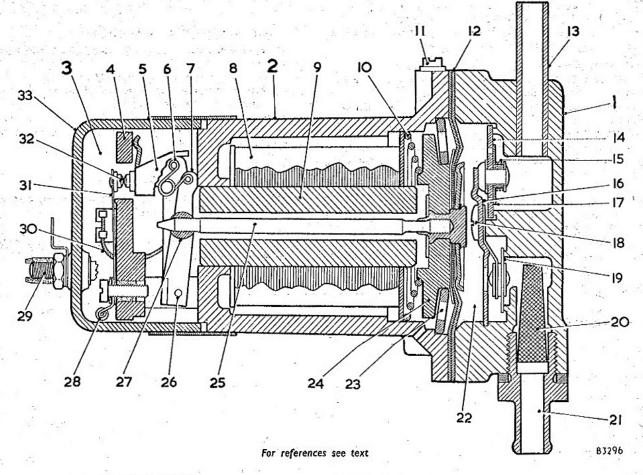
ERDINGTON

**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM





#### INSTALLATION

The Type SP pump, in common with previous types of S.U. high-pressure electric fuel pump, is designed to be mounted in the vicinity of the fuel tank and at a level not appreciably above that of the top of the tank. This situation ensures freedom from vapour generation troubles, even under the most severe conditions of high ambient temperature and high-altitude operation. Mounted in this position, and provided with fuel lines of approximately  $\frac{1}{4}$  in, bore, the pump is capable of supplying approximately 75 pints of fuel per hour at a delivery point about 3 ft. above the level of the tank. It is thus capable of supplying fuel at this rate when ascending the most severe gradient liable to be encountered, even by a vehicle of exceptionally long wheelbase.

The pump is normally provided with a Lucar connecting tag to the terminal screw (29), which can, however, be replaced by other types of connector tag if required. It is essential that a sound connection should be made to earth on the vehicle from the earthing screw (11). (Two ½ in. UNF. tapped holes are provided on the back surface of the main casting for mounting purposes.) An alternative and preferable method of mounting, particularly with regard to inaudibility of operation, is, however, provided for by a circular mounting clip surrounding the coil housing (2), from which it is separated by a soft rubber packing strip. The pump should be mounted in a horizontal position with the outlet nozzle pipe horizontal and at the top.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

#### DESCRIPTION

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature, and magnet assembly (2), and the contact breaker assembly (3).

#### The body

The body is a zinc die casting into which is screwed the inlet nozzle (21) retaining a filter element (20). The outlet nozzle (13) is formed by a tube pressed into the body casting. An inlet valve (19), comprising a disc of plastic film, is lightly loaded on to a seating in the body casting. The outlet valve (17), which again consists of a plastic disc, is loaded by means of a light coil spring (15) on to the face of the outlet valve carrier plate (14), which is kept in contact with a recess formed in the body casting by a portion of the valve clamp plate (16). The complete valve assembly can be withdrawn by removal of the central clamp plate attachment screw (18). The inlet valve (19) allows passage to the pumping chamber (22), which is formed by a shallow depression in the body casting and bounded by the diaphragm (12).

#### The diaphragm, armature, and magnet assembly

The diaphragm (12) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the iron armature (24). The armature spindle (25) passes freely through the magnet core (9) and is screwed into a trunnion (27) carried by the inner rocker (7). Eleven spherically-edged rollers (23) are fitted between the coil housing and the armature, these centralize the armature in the housing and allow freedom of movement in a longitudinal direction.

#### The contact breaker assembly

This consists of a bakelite pedestal moulding (4) which carries two rockers, outer (5) and inner (7), both hinged to the moulding at one end by the rocker spindle (26), and interconnected at their top ends by two small toggle springs (6) arranged to give a 'throw-over' action. The inner rocker as mentioned carries a trunnion into which the armature spindle is screwed. The outer rocker (5) is fitted with one or two tungsten points (32) which contact other tungsten points carried by the spring blade (31). One end of the coil (8) is connected electrically

to the spring blade and the other end is connected to the terminal stud (29). A short length of flexible wire (30) connects the outer rocker to one of the screws securing the pedestal moulding to the coil housing, thus providing an earth return. This must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw (11). The contact-breaker is contained in an end cover moulding (33) secured to the pedestal by a nut and lock-washer on the terminal stud.

#### **ACTION OF THE PUMP**

When the pump is at rest the outer rocker (5) lies in the position illustrated and the tungsten points (32) make contact. When switched on, current passes from the terminal stud (29) through the coll, back to the spring blade (31), through the points, and so to earth, thus energizing the coil and attracting the armature (24). The armature, together with the diaphragm assembly, moves towards the coil, against pressure from the armature spring (10), drawing fuel through the inlet valve into the pumping chamber (22). When the armature has travelled well towards the end of its stroke the 'throw-over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coil under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coil, the 'throw-over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

#### DIAPHRAGM AND CONTACT-BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

#### Diaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion (27). This is done as follows:

- (1) On modified rocker assembles set the two stop fingers as described under the heading 'Contact-breaker'.
- (2) Slacken the screw securing the contact blade (31) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coil housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw-over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the rocker 'throw-over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned, as the outer rocker operates to make or break the contacts, one pair of points wipes over the the centre-line of the other in a symmetrical manner.

#### Contact breaker

Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so

that when repositioned it rests against the rib lightly; overtensioning of the blade will restrict the travel of the rocker mechanism.

Modified rocker assemblies

(Identified by stop fingers fitted to outer rockers.) Check the lift of the blade tip above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of  $0.035\pm0.05$  in.  $0.035\pm0.05$  in.

Check the gap between the rocker finger and coil housing with a feeler gauge bending the stop finger, if necessary, to obtain a gap of  $070\pm005$  in.  $(1.8\pm13$  mm.).

Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a 030 in. (-8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

#### **FAULT DIAGNOSIS**

#### 1. Suspected fuel feed failure

Disconnect the fuel line at the carburetter and check for flow.

- (a) If normal, examine for obstructed float-chamber needle seating or gummed needle.
- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve sealing washers.
- (d) If no flow, check for:
  - (i) Electrical supply

Disconnect the lead from the terminal and test for an electrical supply.

(ii) Faulty contact points

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) Faulty diaphragm action

If the previous operations fail to locate the trouble, stiffening of the diaphragm fabric or abnormal friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where they pivot in the brass rockers. The diaphragm armature assembly should then be

assembled and set in accordance with the instructions given under that heading.

#### 2. Noisy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight.
- (c) Check that the coil housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

- (a) A serious air leak on the suction side, or,
- (b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

#### GUARANTEE

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical Information contained in this Service Sheet supersedes any previous instructions published or authorized on this subject by the Company.

**AUTHORIZED DISTRIBUTOR:** 

THE



# Type AUF200

(SPECIFICATION RANGE: AUF 200 TO AUF 299)

# DESCRIPTION AND FAULT DIAGNOSIS

MANUFACTURED

by

THE S.U. CARBURETTER COMPANY LIMITED

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**ERDINGTON** 

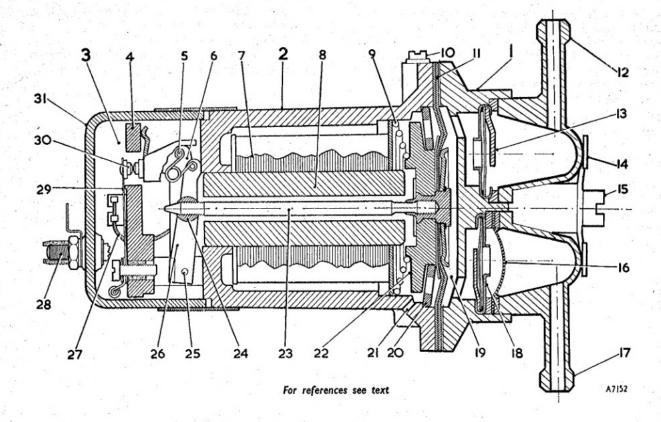
**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines)

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TELEGRAMS: CARBURFLEX, BIRMINGHAM





#### INSTALLATION

The Type AUF 200 pump, in common with previous types of S.U. high-pressure electric fuel pump, is designed to be mounted in the vicinity of the fuel tank and at a level not appreciably above that of the top of the tank. This situation ensures freedom from vapour generation troubles, even under the most severe conditions of high ambient temperature and high-altitude operation. Mounted in this position and provided with fuel lines of approximately ½ in. bore, the pump is capable of supplying approximately 75 pints of fuel per hour at a delivery point about 3 ft. above the level of the tank. It is thus capable of supplying fuel at this rate when ascending the most severe gradient liable to be encountered even by a vehicle of exceptionally long wheelbase.

The pump is normally provided with a Lucar connecting tag to the terminal screw (28), which can, however, be replaced by other types of connector tag if required. It is essential that a sound connection should be made to earth on the vehicle from the earthing screw (10). The most suitable method of mounting, particularly with regard to inaudibility of operation, is by a circular mounting clip surrounding the coil housing (2), from which it is separated by a soft rubber packing strip. The pump should be mounted in a horizontal position with the outlet nozzle (12) uppermost.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

#### DESCRIPTION

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature, and magnet assembly (2), and the contact breaker assembly (3).

#### The body

The body (1) is a casting into which the clamp plate (14), retained by two screws (15), holds the inlet (17) and outlet (12), moulded nozzles, and both valve assemblies, all of which are arranged to be accessible from the outside of the pump. The inlet

valve (18) consists of a thin plastic disc permanently assembled into a pressed-steel cage. The outlet valve (13) is an identical assembly, but reversed in direction. A dome-shaped filter (16) is provided on the entry side of the inlet valve (18). The valve allows passage to the pumping chamber (19), a shallow depression formed on the face of the body casting and bounded by the diaphragm (11).

#### The diaphragm, armature, and magnet assembly

The diaphragm (11) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the iron armature (22). The armature spindle (23) passes freely through the magnet core (8) and is screwed into a trunnion (24) carried by the inner rocker (26). Eleven spherically-edged rollers (20) are fitted between the coil housing and the armature; these centralize the armature in the housing and allow freedom of movement in a longitudinal direction. An atmospheric vent (21) may be fitted to the coil housing.

#### The contact-breaker assembly

This consists of a bakelite pedestal moulding (4) which carries two rockers, outer (6) and inner (26), both hinged to the moulding at one end by the rocker spindle (25), and interconnected at their top ends by two small toggle springs (5) arranged to give a 'throw-over' action. The inner rocker, as mentioned, carries a trunnion into which the armature spindle is screwed. The outer rocker (6) is fitted with one or two tungsten points (30) which contact other tungsten points carried by the spring blade (29). One end of the coil (7) is connected electrically to the spring blade and the other end is connected to the terminal stud (28). A short length of flexible wire (27) connects the outer rocker to one of the screws securing the pedestal moulding to the coll housing, thus providing an earth return. This must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw (10). The contact breaker is contained in an end-cover moulding (31) secured to the pedestal by a nut and lock washer on the pedestal stud.

#### **ACTION OF THE PUMP**

When the pump is at rest the outer rocker (6) lies in the position illustrated and the tungsten points (30) make contact. When switched on, current passes from the terminal stud (28) through the coil, back to the spring blade (29), through the points, and so to earth, thus energizing the coil and attracting the armature (22). The armature, together with the diaphragm assembly, moves towards the coil, against pressure from the armature spring (9), drawing fuel through the inlet valve into the pumping chamber (19). When the armature has travelled well towards the end of its stroke the 'throw-over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coil under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coll, the 'throw-over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

#### DIAPHRAGM AND CONTACT-BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

#### Diaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion.

This is done as follows:

- On modified rocker assemblies set the two stop fingers as described under the heading 'Contact breaker'.
- (2) Slacken the screw securing the contact blade (29) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coil housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw-over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the rocker 'throw-over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned as the outer rocker operates to make or break the contacts, one pair of points wipes over the centre-line of the other in a symmetrical manner.

#### Contact breaker

Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; overtensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

(Identified by stop fingers fitted to outer rockers). Check the lift of the blade tip above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of  $035\pm005$  in.  $(9\pm13$  mm.).

Check the gap between the rocker finger and coil housing with a feeler gauge, bending the stop finger, if necessary, to obtain a gap of  $.070 \pm .005$  in. (1.8 $\pm$ .13 mm.).

#### Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a 030 in. (8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

#### **FAULT DIAGNOSIS**

#### 1. Suspected fuel feed failure

Disconnect the fuel line at the carburetter and check for flow.

- (a) If normal, examine for obstructed float-chamber needle seating or gummed needle.
- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve sealing washers.
- (d) If no flow, check for:
  - (i) Electrical supply

Disconnect the lead from the terminal and test for an electrical supply.

(ii) Faulty contact points

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; If the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) Faulty diaphragm action

If the previous operations fail to locate the trouble, stiffening of the diaphragm fabric or abnormal friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where they pivot in the brass rockers. The diaphragm armature assembly should then be assembled and set in accordance with the instructions given under that heading.

#### 2. Noisy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter

and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight.
- (c) Check that the coil housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

(a) A serious air leak on the suction side, or.

(b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

#### GUARANTEE

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical information contained in this Service Sheet supersedes any previous instructions published or authorized on this subject by the Company.

**AUTHORIZED DISTRIBUTOR:** 

THE



# Туре **AUF300**

(SPECIFICATION RANGE: AUF 300 TO AUF 399)

## DESCRIPTION AND FAULT DIAGNOSIS

MANUFACTURED

## THE S.U. CARBURETTER COMPANY LIMITED

WOOD LANE • ERDINGTON

BIRMINGHAM 24

TELEPHONE: ERDINGTON 7371 (9 lines) TELEGRAMS: CARBURFLEX, BIRMINGHAM



S.U. SERVICE SHEET No. AUA 225 A (C) THE BRITISH MOTOR CORPORATION LIMITED, 1967

#### INSTALLATION

The Type AUF 300 range of pumps, in common with previous types of S.U. high-pressure electric fuel pumps, is designed to be mounted in the vicinity of the fuel tank and at a level not appreciably above that of the top of the tank. This situation ensures freedom from vapour generation troubles, even under the most severe conditions of high ambient temperature and high-altitude operation. Mounted in this position, and provided with fuel lines of approximately  $\frac{1}{15}$  in. (7.9 mm.) diameter bore, the pump is capable of supplying approximately 140 pints (79.5 litres) of fuel per hour at a delivery point about 3 ft. (.9 m.) above the level of the tank. It is thus capable of supplying fuel at this rate when ascending the most severe gradients liable to be encountered, even with a vehicle of exceptionally long wheelbase.

The pump is normally provided with a Lucar connecting tag to the terminal screw (40), which can, however, be replaced by other types of connector tag if required. It is essential that a good electrical connection should be made to earth on the vehicle from the earthing screw (10). The most suitable method of mounting, particularly with regard to inaudibility of operation, is by a circular mounting clip surrounding the coil housing (2), from which it is separated by a soft rubber packing strip. Alternatively, the two tapped  $\frac{1}{16}$  in. B.S.F. holes provided on the main pump body casting (1) may be used. The pump should be mounted in a horizontal position with the outlet (17) uppermost. The coil housing (2) is provided with a vent (37), to which, on externally mounted pumps, a plastic tube must be fixed and led to a moisture-free region.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

#### DESCRIPTION

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature and magnet assembly (2), and the contact breaker assembly (3).

#### The body

The main fuel inlet (19) is in communication with an inlet air bottle (36—lower diagram), and connection to the main pumping chamber (24) is provided by the inlet valve assembly (21). This comprises a plastic valve disc permanently assembled within a pressed-steel cage, which is held in place by a valve cover (22). The outlet from the pumping chamber is provided with an identical valve assembly (11) reversed in direction.

A clamp plate (34), secured by self-tapping screws (see lower diagram), holds both inlet and outlet valve assemblies in position; the valves may be removed by releasing the clamp plate screws. A filter (20) is provided as shown on the entry side of the inlet valve assembly. A flexible plastic diaphragm and barrier (14) loaded by a spring (13) is contained between the vented cover (12) and the perforated diaphragm plate (16), and sealed by the rubber 'O' ring (15). The assembly, a flow smoothing device, is fitted across the extremity of the delivery chamber (18) which communicates with the outlet union (17).

The Inlet valve (21) allows passage to the pumping chamber (24), which is formed by a shallow depression in the body casting and bounded by the diaphragm (23).

#### The diaphragm, armature, and magnet assembly

The diaphragm (23) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the Iron armature (32). The armature spindle (39) passes freely through the magnet core (38) and is screwed into a trunnion (26) carried by the inner rocker (8). Eleven spherically-edged rollers (33) are fitted between the coil housing and the armature; these centralize the armature in the housing and allow freedom of movement in a longitudinal direction. An atmospheric vent (37) may be fitted to the magnet housing.

#### The contact breaker assembly

This consists of a bakelite pedestal moulding (5) which carries two rockers, outer (6) and Inner (8), both hinged to the moulding at one end by the rocker spindle (27), and interconnected at their top ends by two small toggle springs (7) arranged to give a 'throw over' action. The inner rocker, as mentioned, carries a trunnion into which the armature spindle is screwed. The outer rocker (6) is fitted with one or two tungsten points (29) which contact other tungsten points carried by the spring blade (4). One end of the coil (25) is connected electrically to the spring blade and the other end is connected to the terminal stud (40). A short length of flexible wire (28) connects the outer rocker to one of the screws securing the pedestal moulding to the coil housing, thus providing an earth return, this must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw (10). A non-return valve (30) may be fitted to the end-cover moulding (42) to aid the circulation of air through the contact-breaker chamber. A condenser (41) may be fitted in a wire clip to one of the pedestal retaining screws, the tag from it being secured under the contact blade attachment screw.

#### ACTION OF THE PUMP

When the pump is at rest the outer rocker (6) lies in the position illustrated and the tungsten points (29) make contact. When switched on, current passes from the terminal stud (40) through the coil, back to the spring blade (4) through the points and so to earth, thus energizing the coil and attracting the armature (32). The armature, together with the diaphragm assembly, moves towards the coil, against pressure from the armature spring (9), drawing fuel through the inlet valve into the pumping chamber (24). When the armature has travelled well towards the end of its stroke the 'throw over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coil under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coil, the 'throw over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

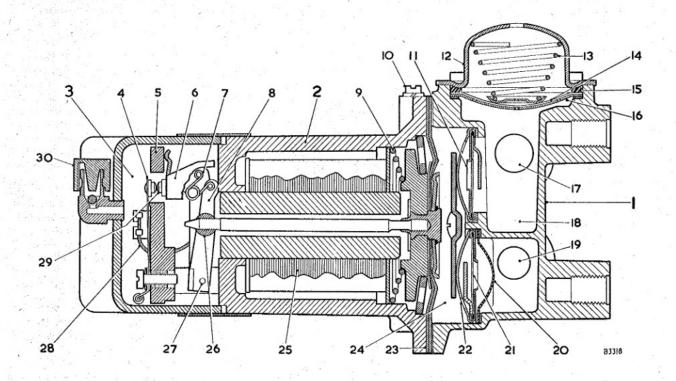
#### DIAPHRAGM AND CONTACT BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

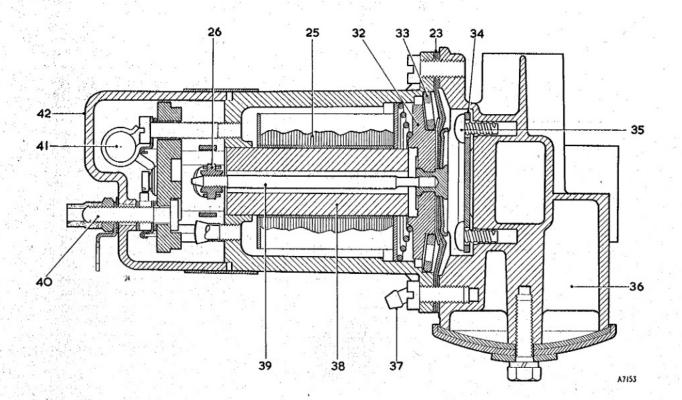
#### Diaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion (26). This is done as follows:

- On modified rocker assemblies set the two stop fingers as described under the heading 'Contact breaker'.
- (2) Slacken the screw securing the contact blade (4) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coll housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the rocker 'throw over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should



For references see text



now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned, as the outer rocker operates to make or break the contacts, one pair of points wipes over the centre-line of the other in a symmetrical manner.

#### Contact breaker

Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; overtensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

(Identified by stop finger fitted to outer rockers). Check the lift of the blade tip above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal if necessary to obtain a lift of  $0.035\pm0.05$  in.  $(.9\pm.13$  mm.).

Check the gap between the rocker finger and coll housing with a feeler gauge bending the stop finger if necessary to obtain a gap of .070±.005 in. (1.8±.13 mm.).

#### Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a .030 in. (.8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

#### **FAULT DIAGNOSIS**

#### 1. Suspected fuel feed failure

Disconnect the fuel line at the carburetter and check for flow

(a) If normal, examine for obstructed float-chamber needle seating or gummed needle.

- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve sealing washers.
- (d) If no flow, check for:
  - (i) Electrical supply

Disconnect the lead from the terminal and test for an electrical supply.

(II) Faulty contact points

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then

performs a stroke the fault is due to dirt, corrosion or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) Faulty diaphragm action

If the previous operations fall to locate the trouble, stiffening of the diaphragm fabric or abnormal friction in the rocker throw-over mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the throw-over spring spindles at a point where they pivot in the brass rockers. The diaphragm/armature assembly should then be assembled and set in accordance with the instructions given under that heading.

#### 2. Noisy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight and that the sealing 'O' rings are not damaged.
- (c) Check that the coll housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

- (a) A serious air leak on the suction side, or,
- (b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning, care being taken that the Melinex material of the valve disc is not scratched or damaged during this operation.

#### GUARANTEE

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical information contained in this Service Sheet supersedes any previous instructions published or authorized on this subject by the Company.

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# Туре

(SPECIFICATION RANGE: AUF 400 to AUF 499)

## DESCRIPTION AND FAULT DIAGNOSIS

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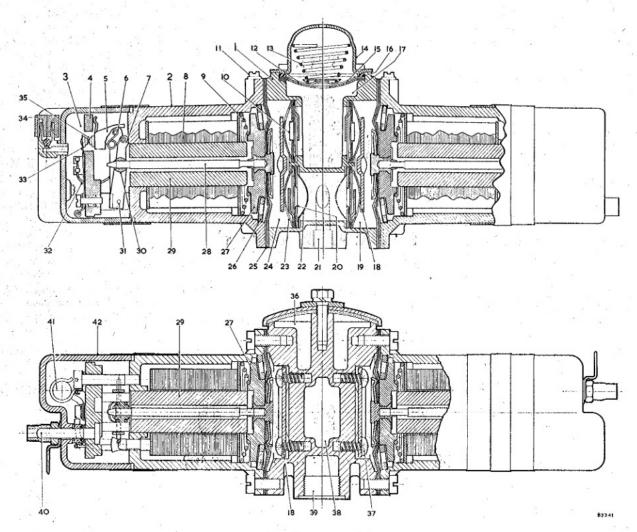
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#### DESCRIPTION

The AUF 400 Type Dual pump is, constructionally, somewhat similar to the AUF 500 Type Double-entry pump as described in Service Sheet AUA 223 A. It differs, however, from the Double-entry pump in that the two pumping chambers with their associated pumping units operate simultaneously, being provided with a common inlet connection.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature and magnet assembly (2), and the contact-breaker assembly (3). For clarity, these will be described as single units.

#### The body

The body (1) consists of a die casting into which the inlet union (21), shown out of its true position on the diagram, is screwed. The inlet union is in communication with an inlet air bottle (36). A flexible plastic diaphragm and barrier (15) loaded by a spring (13) is contained between the vented cover (14) and the perforated diaphragm plate (12), and sealed by the rubber 'O' ring (16). The assembly, a flow smoothing device, is fitted across the extremity of the delivery chamber (17) which communicates with the outlet union (39).

The Inlet valve assembly (20) comprises a plastic disc permanently assembled into a pressed-steel cage which fits into a

recess in the body casting. A domed filter (22) is provided on its entry side.

The outlet valve (10) is an identical assembly but reversed in direction. Both valves are held in position by valve covers (23) retained by a clamp plate (18) and two self-tapping screws (37).

The inlet valve (20) allows passage to the pumping chambers (19 and 24) formed by a shallow depression in the body casting and bounded by the diaphragm (25).

#### The diaphragm, armature, and magnet assembly

The diaphragm (25) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the iron armature (27). The armature spindle (28) passes freely through the magnet core (29) and is screwed into a trunnion (30) carried by the inner rocker (7). Eleven spherically-edged rollers (26) are fitted between the coil housing and the armature; these centralize the armature in the housing and allow freedom of movement in a longitudinal direction. An atmospheric vent may be drilled in the coil housing.

#### The contact breaker assembly

This consists of a bakelite pedestal moulding (4) which carries two rockers, outer (5) and inner (7), both hinged to the moulding at one end by the rocker spindle (31), and interconnected at their top ends by two small toggle springs (6) arranged to give a 'throw-over' action. The inner rocker as mentioned carries a trunnion into which the armature spindle is

screwed. The outer rocker (5) is fitted with one or two tungsten points (35) which contact other tungsten points carried by the spring blade (33). One end of the coil (8) is connected electrically to the spring blade and the other end is connected to the terminal stud (40). A short length of flexible wire (32) connects the outer rocker to one of the screws securing the pedestal moulding to the coil housing, thus providing an earth return. This must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw (11). A non-return valve (34) may be fitted to the end-cover moulding (42) to aid the circulation of air through the contact-breaker chamber. A condenser (41) may be fitted in a wire clip to one of the pedestal retaining screws, the tag from it being secured under the contact blade attachment screw.

#### **ACTION OF THE PUMP**

When the pump is at rest the outer rocker (5) lies in the position illustrated and the tungsten points (35) make contact. When switched on, current passes from the terminal stud (40) through the coll, back to the spring blade (33), through the points, and so to earth, thus energizing the coil and attracting the armature (27). The armature, together with the diaphragm assembly. moves towards the coll, against pressure from the armature spring (9), drawing fuel through the inlet valve into the pumping chamber (24). When the armature has travelled well towards the end of its stroke the 'throw over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coll under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coil, the 'throw over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

#### DIAPHRAGM AND CONTACT-BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

#### Diaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion (30). This is done as follows:

- (1) On modified rocker assemblies set the two stop fingers as described under the heading 'Contact Breaker'.
- (2) Slacken the screw securing the contact blade (33) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coil housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw-over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the rocker 'throw-over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned as the outer rocker operates to make or break the contacts, one pair of points wipes over the the centre-line of the other in a symmetrical manner.

#### Contact breaker

Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; overtensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

(Identified by stop fingers fitted to outer rockers), Check the lift of the blade tip above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of .035±.005 in. (.9±.13 mm.).

Check the gap between the rocker finger and coll housing with a feeler gauge bending the stop finger, if necessary, to obtain a gap of 070 ± 005 in. (1.8 ± 13 mm.).

## Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a '030 in. (8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

#### **FAULT DIAGNOSIS**

#### 1. Suspected fuel feed failure and the substitution of the substit

Disconnect the fuel line at the carburetter and check for flow.

- (a) If normal, examine for obstructed float-chamber needle seating or gummed needle.
- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve sealing washers.
- (d) If no flow, check for:
  - (i) Electrical supply

Disconnect the lead from the terminal and test for an electrical supply.

(II) Faulty contact points

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) Faulty diaphragm action

If the previous operations fall to locate the trouble, stiffening of the diaphragm fabric or abnormal

friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where they pivot in the brass rockers. The diaphragm armature assembly should then be assembled and set in accordance with the instructions given under that heading.

#### 2. Noisy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight.

(c) Check that the coil housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

- (a) A serious air leak on the suction side, or,
- (b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

#### GUARANTEE

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical information contained in this Service Sheet supersedes any previous instructions published or authorised on this subject by the Company.

#### AUTHORIZED DISTRIBUTOR:

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## FUEL PUMP

# Type **AUF 500**

(SPECIFICATION RANGE: AUF 500 TO AUF 599)

## DESCRIPTION AND FAULT DIAGNOSIS

MANUFACTURED

#### THE S.U. CARBURETTER COMPANY LIMITED

Proprietors: MORRIS MOTORS LIMITED

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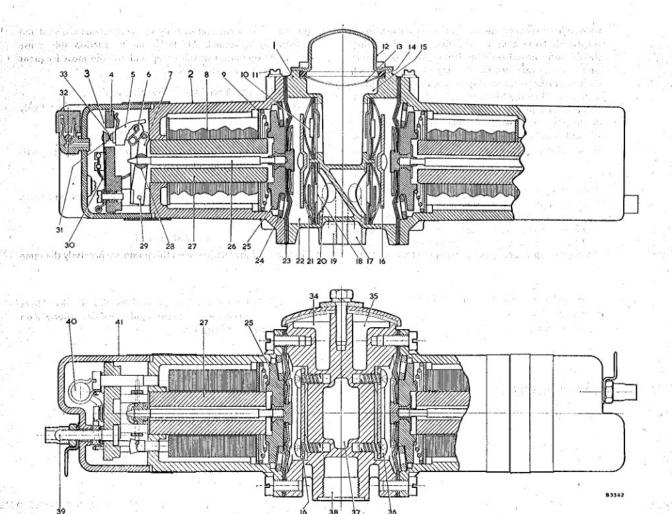
ERDINGTON

**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM





For references see text

#### DESCRIPTION

The AUF 500 'double-entry' pump is, constructionally, somewhat similar to the AUF 400 'dual pump' as described in Service Sheet AUA 226 A. It differs, however, in that the two pumping chambers with their associated pumping units are not normally intended to operate simultaneously, the one being provided with an inlet connection supplied by a feed pipe which terminates short of the bottom of the fuel tank while the other feed pipe draws its fuel in the normal manner from the bottom of the tank. Thus, the pump is provided with two inlet passages marked, respectively, 'Main' and 'Reserve'. The two pumping units are alternatively energized by a two-way switch with corresponding 'Main' and 'Reserve' markings.

When a pump is being connected it must be primed by disconnecting the fuel pipe at the carburetter until a flow is obtained.

The pump comprises three main assemblies: the body casting (1), the diaphragm, armature, and magnet assembly (2), and the contact-breaker assembly (3).

#### The body

The body (1) is a die casting into which the main inlet union (19), shown out of its true position, is screwed; this is connected to one side of a divided compartment which is in communication with an inlet air bottle (34) separated from the corresponding inlet air bottle (35) which serves the 'Reserve' inlet connection (17). The delivery chamber (15), which is common to both main and reserve delivery, is bounded by a flexible plastic diaphragm (13), separating the delivery chamber from a sealed volume of air

contained in the air bottle cover (12), sealed by the 'O' ring (14). The inlet valve assembly (18) comprises a plastic disc permanently assembled in a pressed-steel cage; a domed filter (20) is provided on its entry side. The outlet valve (10) is an identical assembly, but reversed in direction. Both valves are held in position by valve covers (21), retained by a clamp plate (16) and two self-tapping screws (36). The inlet valve (18) allows passage to the pumping chamber (22), formed by a shallow depression in the body casting and bounded by the diaphragm (23).

#### The diaphragm, armature, and magnet assembly

The diaphragm (23) is clamped at its outer edge between the coil housing (2) and the body, and attached at its centre to the iron armature (25). The armature spindle (26) passes freely through the magnet core (27) and is screwed into a trunnlon (28) carried by the inner rocker (7). Eleven spherically-edged rollers (24) are fitted between the coil housing and the armature; these centralize the armature in the housing and allow freedom of movement in a longitudinal direction. An atmospheric vent may be drilled in the coil housing.

#### The contact-breaker assembly

This consists of a bakelite pedestal moulding (4) which carries two rockers, outer (5) and inner (7), both hinged to the moulding at one end by the rocker spindle (29), and interconnected at their top ends by two small toggle springs (6) arranged to give a 'throw-over' action. The inner rocker, as mentioned, carries a trunnion into which the armature spindle is screwed. The outer rocker (5) is fitted with one or two tungsten

points (32) which contact other tungsten points carried by the spring blade (31). One end of the coil (8) is connected electrically to the spring blade and the other end is connected to the terminal stud (39). A short length of flexible wire (30) connects the outer rocker to one of the screws securing the pedestal moulding to the coil housing, thus providing an earth return. This must then be thoroughly earthed to the body or chassis of the vehicle via the earthing screw (11). A non-return valve (32) may be fitted to the end-cover moulding (41) to ald the circulation of air through the contact-breaker chamber. A condenser (40) may be fitted in a wire clip to one of the pedestal retaining screws, the tag from it being secured under the contact blade attachment screw.

#### ACTION OF THE PUMP

When the pump is at rest the outer rocker (5) lies in the position illustrated and the tungsten points (33) make contact. When switched on, current passes from the terminal stud (39) through the coll, back to the spring blade (31), through the points, and so to earth, thus energizing the coil and attracting the armature (25). The armature, together with the diaphragm assembly, moves towards the coil, against pressure from the armature spring (9), drawing fuel through the inlet valve into the pumping chamber (22). When the armature has travelled well towards the end of its stroke the 'throw-over' mechanism operates and the outer rocker moves rapidly backwards, thus separating the contact points and breaking the circuit. The armature and diaphragm will now move away from the coil under the influence of the armature spring, thereby expelling the fuel through the outlet valve at a rate determined by the requirements of the engine. As the armature approaches the end of its stroke, away from the coil, the 'throw-over' mechanism again operates, the tungsten points re-make contact, and the cycle of operations is repeated.

#### DIAPHRAGM AND CONTACT-BREAKER SETTINGS

A range of leaflets on Dismantling and Reassembling pumps is available. These should be referred to for operations not listed.

#### Dlaphragm

If the diaphragm has been disturbed, it is necessary to reset the position of the armature spindle in the rocker trunnion (28). This is done as follows:

- (1) On modified rocker assemblies set the two stop fingers as described under the heading 'Contact breaker'.
- (2) Slacken the screw securing the contact blade (31) and swing the blade to one side, so that the points no longer make contact.
- (3) Holding the coil housing (2) in the left hand, screw the diaphragm in generously with the thumb of the right hand, alternately pressing gently and turning until the rocker 'throw-over' ceases.
- (4) Unscrew the diaphragm one-sixth of a turn at a time in the same manner, slowly pressing and turning until the rocker 'throw-over' just operates.
- (5) At this point, continue unscrewing until the nearest securing screw hole is just lined up, and then again four holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- (6) The contact blade, previously swung to one side, should now be replaced in its correct position. The slot for the attachment screw allows a degree of adjustment so that when correctly positioned as the outer rocker operates to make or break the contacts, one pair of points wipes over the the centre-line of the other in a symmetrical manner.

#### Contact breaker

Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib which projects slightly above the main face of the pedestal. If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly; overtensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

(Identified by stop fingers fitted to outer rockers). Check the lift of the blade tlp above the top of the pedestal with a feeler gauge, bending the stop finger beneath the pedestal, if necessary, to obtain a lift of  $\cdot 035 \pm \cdot 005$  in. ( $\cdot 9 \pm \cdot 13$  mm.).

Check the gap between the rocker finger and coil housing with a feeler gauge, bending the stop finger, if necessary, to obtain a gap of  $070\pm005$  in. (1.8 $\pm$ .13 mm.).

#### Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip of the blade. Then check if a .030 in. (8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary, the tip of the blade can be set to correct the gap.

#### **FAULT DIAGNOSIS**

#### 1. Suspected fuel feed failure

Disconnect the fuel line at the carburetter and check for flow.

- (a) If normal, examine for obstructed float-chamber needle seating or gummed needle.
- (b) If normal initially, but diminishing rapidly and accompanied by slow pump operation, check for correct tank venting by removing the filler cap. Inadequate venting causes a slow power stroke, with resultant excessive burning of contact points.
- (c) If reduced flow is accompanied by slow operation of the pump, check for any restriction on the inlet side of the pump, such as a clogged filter, which should be removed and cleaned. In the case of reduced flow with rapid operation of the pump, check for an air leak on the suction side, dirt under the valves, or faulty valve sealing washers.
- (d) If no flow, check for:
  - (i) Electrical supply

Disconnect the lead from the terminal and test for an electrical supply.

(II) Faulty contact points

If electrical supply is satisfactory the bakelite cover should be removed to check that the tungsten points are in contact. The lead should then be replaced on the terminal and a short piece of bared wire put across the contacts. If the pump then performs a stroke the fault is due to dirt, corrosion, or maladjustment of the tungsten points.

(iii) Obstructed pipeline between fuel tank and pump

The inlet pipe should be disconnected; if the pump then operates, trouble is due to a restriction in the pipeline between the pump and the tank. This may be cleared by the use of compressed air after removing the fuel tank filler cap. It should be noted, however, that compressed air should not be passed through the pump, as this will cause serious damage to the valves.

(iv) Faulty diaphragm action

If the previous operations fail to locate the trouble, stiffening of the diaphragm fabric or abnormal

friction in the rocker 'throw-over' mechanism is to be suspected. To remedy these faults, the coil housing should be removed and the diaphragm flexed a few times, taking care not to lose any of the 11 rollers under it. Prior to reassembly, it is advisable to apply a little thin oil to the 'throw-over' spring spindles at a point where they pivot in the brass rockers. The diaphragm armature assembly should then be assembled and set in accordance with the instructions given under that heading.

#### 2. Noisy pump

Air leaks. If the pump is noisy in operation, an air leak at one or other of the suction lines may be the cause. Such a leak may be checked by disconnecting the fuel pipe from the carburetter and allowing the pump to discharge into a suitable container with the end of the pipe submerged. The emission of continuous bubbles at this point will confirm the existence of an air leak. The fault should be rectified by carrying out the following procedure:

- (a) Check that all connections from the fuel tank to the pump are in good order.
- (b) Check that the inlet union is tight.

(c) Check that the coil housing securing screws are well and evenly tightened. Air leaks on the suction side cause rapid operation of the pump and are the most frequent cause of premature failure.

#### 3. Pump operates without delivering fuel

If the pump operates without delivering fuel the most likely causes are:

- (a) A serious air leak on the suction side, or,
- (b) Foreign matter lodged under one of the valves, particularly under the inlet valve.

To remedy (a) see para. 2 above.

To remove any foreign matter lodged under the valves these should be removed for cleaning.

#### GUARANTEE

The terms of the guarantee on this pump are precisely the same as those on the car to which it is fitted.

The technical information contained in this Service Sheet supersedes any previous instructions published or authorized on this subject by the Company.

AUTHORIZED DISTRIBUTOR:

THE



## FUEL PUMP

# Type L and HP single

# DISMANTLING AND REASSEMBLING INSTRUCTIONS

MANUFACTURED

### THE S.U. CARBURETTER COMPANY LIMITED

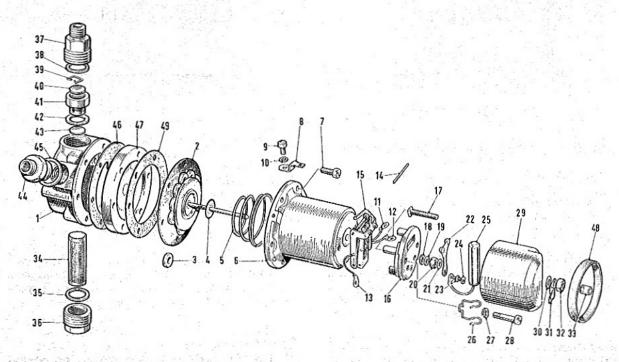
WOOD LANE • ERDINGTON • BIRMINGHAM 24
TELEPHONE: ERDINGTON 7371 (9 lines) TELEGRAMS: CARBURFLEX, BIRMINGHAM



S.U. SERVICE SHEET No. AUA 228

THE BRITISH MOTOR CORPORATION LIMITED, 1966

### THE S.U. TYPE L AND HP SINGLE PUMP



B3265

No.	Description	No.	Description	No.	Description
1.	Pump body.	17.	Stud—terminal.	33.	Sleeve—insulating.
2.	Diaphragm and spindle assembly.	18.	Washer-spring.	34.	Filter.
3.	Roller-armature centralizing.	19.	Washer-lead.	35.	Washer.
4.	Washer—Impact.	20.	Nut-terminal.	36.	Plug—filter.
5.	Spring—armature.	21.	Washer-end cover seal.	37.	Connection—outlet.
6.	Housing-coil.	22.	Contact blade.	38.	Washer (Medium)-fibro
7.	Screw-securing housing-2 B.A.	23.	Washer-5 B.A.	39.	Clip-spring.
8.	Connector-earth.	24.	Screw-contact blade-5 B.A.	40.	Valve—outlet.
9.	Screw-earth (4 B.AH,	25,	Condenser.	41.	Cage-outlet valve.
	2 B.A.—L).	26.	Clip-condenser.	42.	Washer (Thin)—fibre.
10.	Washer—spring.	27.	Washer-spring, 2 B.A.	43.	Valve—inlet.
11.	Tag-terminal-5 B.A.	28.	Screw-pedestal to housing-	44.	Connection—inlet.
12.	Tag-terminal—2 B.A.		2 B.A.	45.	Washer—fibre.
13.	Tag-earth-2 B.A.	29.	End cover.	46.	Gasket-loint.
14.	Pin-rocker pivot.	30.	Washer-shakeproof-2 B.A.	47.	Plate—sandwich.
15.	Rocker mechanism.	31.	Connector—Lucar.	48.	Band-sealing.
16.	Pedestal.	32.	Nut—2 B.A.	49.	Gasket-diaphragm.
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#### DISMANTLING

#### Contact breaker

- Remove the insulated knob or sleeve (33), terminal nut (32), and connector (31), together with its shakeproof washer. Remove the tape seal (if fitted) and take off the end-cover.
- Unscrew the 5 B.A. screw (24) which secures the contact blade (22) to the pedestal (16) and remove the condenser (25) (if fitted) from its clip. This will allow the washer (23), the long-coil lead (11), and the contact blade to be removed.

#### Coil housing and diaphragm

- Unscrew the coil housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- Remove the earthing screw (9). On earlier pumps a 2 B.A. earthing stud (Fig. 1) was fitted in the 9 o'clock position on 12-volt pumps, and in the 12 o'clock position on 6-volt pumps, looking at the front or pedestal end of the pump.
- 5. The coil housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall onto the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.

#### Pedestal and rocker

- 6. Remove the end-cover seal washer (21), unscrew the terminal nut (20), and remove the lead washer (19); this will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (28), holding the pedestal to the coil housing, remove the earth terminal tag (13) together with the condenser clip (26) (if fitted). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism attached.
- 7. Push out the hardened steel pin (14) which holds the rocker mechanism to the pedestal and separate the two.

#### **Body and valves**

8. Remove the inlet union (44), the outlet union (37), the outlet valve cage (41), and the inlet valve disc (43). Remove the base plug (36) and filter (34).

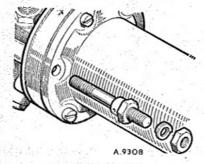


Fig. 1. The earthing stud on earlier pumps

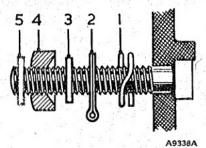


Fig. 2. The correct assembly of components on the terminal stud

#### INSPECTION

If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent. solution of caustic soda, dipped in a strong nitric acid solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- Remove the circlip in the outlet valve cage and examine the inlet and outlet valve discs for wear. Scrap if worn.
- Examine the valve seat in the body and outlet valve cage for damage and corrosion; if it is impossible to remove the corrosion, or if the seat is pitted, the body or cage must be discarded.
- Clean the filter with a brush and examine for fractures, renew if necessary.
- Examine the coil lead tags for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- Examine the pedestal for cracks or other damage, particularly to the narrow ridge on the edge of the rectangular hole on which the contact blade rests.
- 8. Examine the diaphragm for signs of deterioration.
- Renew the following parts: all fibre washers, gaskets, and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts, and unions.

#### **ASSEMBLY**

#### Pedestal and rocker

Note. The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

1. Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 3) through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact point, the centre toggle spring is above the spindle on which the white rollers run. This positioning is important to obtain the correct 'throw over' action; it is also essential that the rockers are perfectly free to swing on the pivot pin and

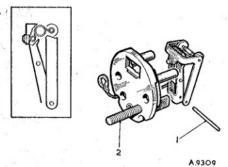


Fig. 3. Fitting the rocker assembly to the pedestal. (Inset) the correct position of the centre toggle spring

that the arms are not binding on the legs of the pedestal.

If necessary the rockers can be squared up with a pair
of thin-nosed pliers.

Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head.

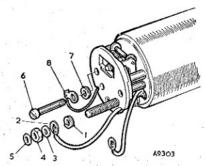


Fig. 4. Attaching the pedestal to the coil housing

- 3. Assemble the 2 B.A. spring washer (1) (Fig. 4), and put the terminal stud through the 2 B.A. terminal tag (2), then fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).
- 4. Assemble the pedestal to the coll housing (Fig. 4) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8). When a condenser is fitted, its wire clip base is placed under the earthing tag and the spring washer is dispensed with
- Tighten the screws, taking care to prevent the earthing tag (8) from turning, as this will strain or break the earth-

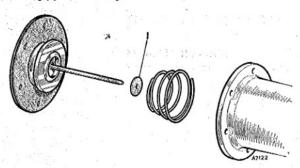


Fig. 5. Fitting the diaphragm to the coil housing. Note the impact washer (1)



Fig. 6. Inserting the diaphragm centralizing rollers

ing flex. Do not overtighten the screws or the pedestal will crack.

Do not fit the contact blade at this stage.

#### Diaphragm assembly

- Place the armature spring into the coil housing with its larger diameter towards the coil (Fig. 5).
- Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over'; this must not be confused with jamming the armature on the coil housing internal steps.
- 10. Fit the 11 brass centralizing rollers (Fig. 6) by turning back the diaphragm edge and dropping the rollers into the coil recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

11. Holding the coil housing assembly in the left hand in an approximately horizontal position (see Fig. 7), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.



Fig. 7. Setting the diaphragm. Unscrew until the rocker just 'throws over'

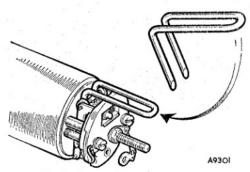


Fig. 8. Fitting the roller retaining fork

12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 8). This is done to prevent the rollers from falling out when the coil housing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

#### **Body components**

Note.—Outlet valve cages may be identified by the 4-hole drilling of the HP type and the 2-hole drilling of the L type.

- 13. Assemble the brass valve disc (4) (Fig. 9) to the outlet valve cage, (3) making sure that the smooth face of the disc faces the valve seat, retain it in position with the circlip (5) which must be located in the groove in the valve cage. The valve must rattle freely when the valve cage is shaken.
- 14. Drop the other valve disc (1) (Fig. 9) smooth face downwards onto the inlet valve seat in the body of the pump, insert the thin fibre washer (2), drop the valve cage (3) in position, insert the medium fibre washer (6), then screw in the outlet union (7), and tighten with a \frac{3}{4}-in. Whitworth ring or box spanner. Fit the inlet union.

#### **Body attachment**

- 15. Place the sandwich plate gasket on the face of the body, lining up the holes in the body and gasket; fit the sandwich plate, concave face to diaphragm with the diaphragm gasket, again lining up the holes.
- Offer up the coil housing to the body and sandwich plate and ensure correct seating between them. Outlet connection to the top and filter plug at bottom.
- 17. Line up the six securing screw holes, making sure that the two cast lugs on the coil housing are at the bottom, insert the six 2 B.A. screws finger-tight. Fit the earthing screw with its Lucar connector.

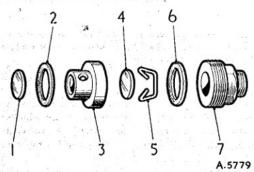


Fig. 9. The valve assembly, L and HP single pumps

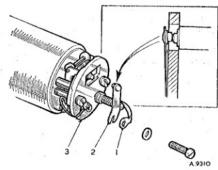


Fig. 10. Setting the correct relative position of blade and rocker contact points

Note 1. On short HP pumps the earthing screw has been reduced in size from 2 B.A. to 4 B.A. thus an L-type pump can be identified externally by the 2 B.A. earthing screw.

Note 2. Earlier L and HP pumps have an earthing stud fitted in the 9 o'clock position (see Fig. 1).

- 18. Remove the roller retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It is not necessary to stretch the diaphragm before tightening the securing screws.
- Tighten the securing screws in sequence as they appear diametrically opposite each other.

#### Contact blade

- 20. Fit the contact blade (2) (Fig. 10) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw. When a condenser is fitted the tag on it is placed under the coil lead tag.
- 21. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 10), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner.

As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.

Tighten the contact blade attachment screw when the correct setting is obtained.

#### Contact gap settings

23. Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the

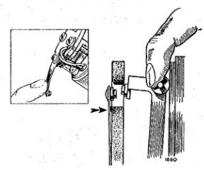


Fig. 11. Setting the contact blade to ensure contact with the pedestal ridge

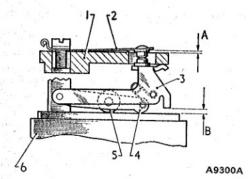


Fig. 12. The rocker finger settings on modified rocker assemblies

- Pedestal.
- Contact blade.
- 3. Outer rocker.
- A=-035 in. (·9 mm.).
- Inner rocker.
- Trunnion.
- Coil housing.
- B=-070 in. (1.8 mm.).

pedestal (Fig. 11). If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

- 24. Check the lift of the contact blade tip above the top of the pedestal (A) (Fig. 12) with a feeler gauge, bending the stop-finger beneath the pedestal, If necessary, to obtain a lift of  $\cdot 035 \pm \cdot 005$  in. ( $\cdot 9 \pm \cdot 13$  mm.).
- 25. Check the gap between rocker finger and coil housing (B) (Fig. 12) with a feeler gauge, bending the stop-finger, If necessary, to obtain a gap of .070 ± .005 in. (1.8 ± .13

#### Earlier-type rocker assemblies

26. Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal

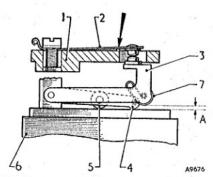


Fig. 13. The contact gap setting on earlier-type rocker assemblies

- 1. Pedestal.
- Inner rocker.
- Contact blade.
- Trunnion.
- Outer rocker.
- Coil housing.

A=-030 in. (·8 mm.).

without pressing against the tip (see Fig. 13). Then check if a .030 in. (.8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary the tip of the blade can be set to correct the gap.

#### **End-cover**

- 27. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and the insulated knob or sleeve.
- 28. The pump is now ready for test (see leaflet AUA 213 A). After test replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.

Note.—The technical information contained in this Service Sheet supersedes any instruction previously published or authorized on this subject by the Company.

THE



# Туре LCS

# DISMANTLING AND REASSEMBLING **INSTRUCTIONS**

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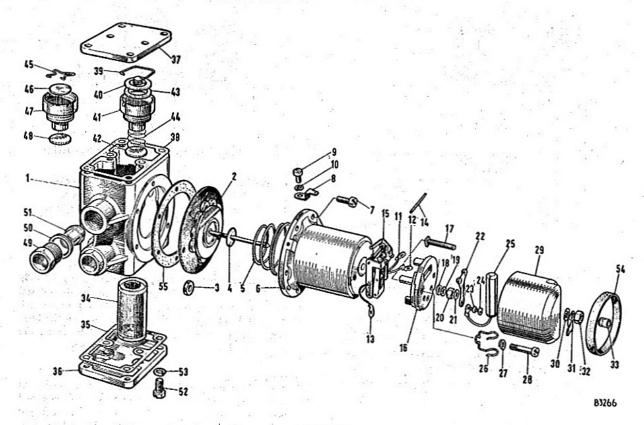
BIRMINGHAM 24

TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM



## THE S.U. TYPE LCS PUMP



No	Description	No.	Description	No.	Description
1.	Pump body.	20.	Nut-terminal.	38.	Gasket-upper cover.
2.	Diaphragm and spindle assembly.	21.	Washer-end cover seal.	39.	Clip—valve }
3.	Roller-armature centralizing.	22.	Contact blade.	40.	Valve—outlet
4.	Washer-impact,	23.	Washer—5 B.A.	41.	Cage—outlet valve Later
<b>5</b> .	Spring—armature.	24.	Screw-contact blade-5 B.A.	42.	Valve-inlet pumps.
6.	Housing-coil.	25.	Condenser.	43.	Washer-cork
7.	Screw-securing housing-2 B.A.	26.	Clip-condenser.	44.	Spring—inlet valve
8.	Connector-earth.	27.	Washer—spring—2 B.A.	45.	Clip-valve
9.	Screw-4 B.A.	28.	Screw-pedestal to housing-	46.	Valve—outlet Earlier
10.	Washer spring—4 B.A.		2 B.A.	47.	
11.	Tag-terminal-5 B.A.	29.	End cover.	48.	Valve—inlet
12.	Tag—terminal—2 B.A.	30.	Washer-shakeproof-2 B.A.	49.	Connection—outlet.
13.	Tag-earth-2 B.A.	31.	Connector—Lucar.	50.	Washerrubber.
14.	Pin-rocker pivot.	32.	Nut—2 B.A.	51.	Nipple—outlet.
	Rocker mechanism.	33.	Sleeve-Insulating.		Screw—securing cover—2 B.A.
	Pedestal.	34.	Filter.		Washer—spring—2 B.A.
	Stud-terminal.	35.	Gasket-lower cover.		Band-sealing.
	Washer-spring.	36.	Cover—lower.		Gasket—diaphragm.
	Washer—lead.		Cover—upper.	33,	Gasket-diaphiragin.

Note.—A joint gasket .030 in. thick is fitted between the diaphragm and coil-housing when a single-layer diaphragm is used.

#### DISMANTLING

#### Contact breaker

- Remove the insulated knob or sleeve (33), terminal nut (32), and connector (31), together with its shakeproof washer. Remove the tape seal (if fitted) and take off the end-cover.
- Remove the condenser (25) (if fitted) from its clip.
   Unscrew the 5 B.A. screw (24) which holds the contact blade (22) to the pedestal (16), and this will allow the washer (23), the long-coil lead (11), and the contact blade to be removed.

#### Coll housing and diaphragm

- Unscrew the coll housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- 4. Remove the earthing screw (9). On earlier pumps a 2 B.A. earthing stud (Fig. 1) was fitted in the 9 o'clock position on 12-volt pumps, and in the 12 o'clock position on 6-volt pumps, looking at the front or pedestal end of the pump.
- 5. The coil housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall onto the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.

#### Pedestal and rocker

- 6. Remove the end-cover seal washer (21), unscrew the terminal nut (20), and remove the lead washer (19); this will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (28), holding the pedestal to the coll housing, remove the earth terminal tag (13) together with the condenser clip (26) (if fitted). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism attached.
- 7. Push out the hardened steel pin (14) which holds the rocker mechanism to the pedestal and separate the two.

#### **Body and valves**

- Remove the body covers (36) and (37), joint washers, and filter (34).
- 9. Unscrew the outlet valve cage (41), in which is located a rivered outlet valve assembly (40), comprising a brass seating, a light spring, and a thin plastic valve disc; this is serviced as a unit and should not be separated. Remove the inlet valve spring (44) and disc (42) from the body.

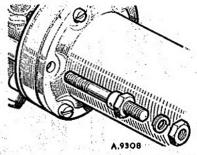


Fig. 1. The earthing stud on earlier pumps

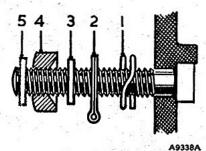


Fig. 2. The correct assembly of components on the terminal stud

Earlier LCS pumps have plain valve discs (46) and (48) which can be removed from the valve cage by releasing the spring clip; no inlet valve spring is fitted.

#### INSPECTION

If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent, solution of caustic soda, dipped in a strong nitric acid solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- 2. On later-type pumps examine the outlet valve for damage. Check that the centre rivet is tight and that the light spring has not unwound, but is still holding the plastic valve disc on its seating. The valve disc should be free to lift, and not be trapped under the rivet shoulder. There must be no kinks or marks which might cause it to fail to seat. On earlier pumps remove the circlip in the valve assembly and examine the discs for wear. Scrap if worn.
- Examine the valve seat in the body and outlet valve cage for damage and corrosion; if it is impossible to remove the corrosion, or if the seat is pitted, the body must be discarded.
- Clean the filter with a brush and examine for fractures, renew if necessary.
- Examine the coil lead tag for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- Examine the pedestal for cracks or other damage, particularly to the narrow ridge on the edge of the rectangular hole on which the contact blade rests.
- 8. Examine the diaphragm for signs of deterioration.
- Renew the following parts: All fibre washers, gaskets, and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts, and unions.

#### **ASSEMBLY**

#### Pedestal and rocker

Note. The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

1. Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 3) through the small holes

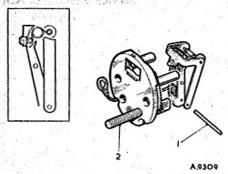


Fig. 3. Fitting the rocker assembly to the pedestal. (Inset) the correct position of the centre toggle spring

in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact point, the centre toggle spring is above the spindle on which the white rollers run (see Fig. 3). This positioning is important to obtain the correct 'throw over' action; it is also essential that the rockers are perfectly free to swing on the pivot pin and that the arms are not binding on the legs of the pedestal.

If necessary the rockers can be squared up with a pair of thin-nosed pliers.

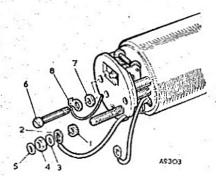


Fig. 4. Attaching the pedestal to the coil housing

- Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head
- 3. Assemble the 2 B.A. spring washer (1) (Fig. 4), and put the terminal stud through the 2 B.A. terminal tag (2), then fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).

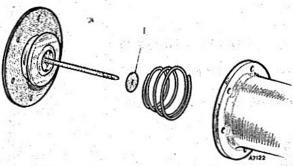


Fig. 5. Fitting the diaphragm to the coil housing. Note the impact washer (1)

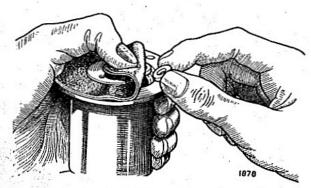


Fig. 6. Inserting the diaphragm centralizing rollers

- 4. Assemble the pedestal to the coil housing (Fig. 4) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8). When a condenser is fitted, its wire clip base is placed under the earthing tag and the spring washer is dispensed with.
- Tighten the screws, taking care to prevent the earthing tag (8) from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack.

#### Do not fit the contact blade at this stage.

#### Diaphragm assembly

- Place the armature spring into the coll housing with its larger diameter towards the coll (Fig. 5).
- Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by Inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over', this must not be confused with jamming the armature on the coil housing internal steps.
- 10. Fit the 11 brass centralizing rollers (Fig. 6) by turning back the diaphragm edge and dropping the rollers into the coil recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

11. Holding the coil housing assembly in the left hand in an

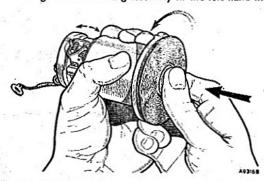


Fig. 7. Setting the diaphragm. Unscrew until the rocker just 'throws over'

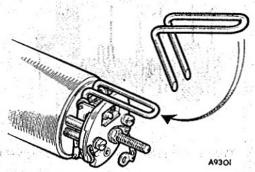


Fig. 8. Fitting the roller retaining fork

approximately horizontal position (see Fig. 7), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.

12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 8). This is done to prevent the rollers from falling out when the coil housing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

#### Body components

- 13. On later-type pumps with plastic valves assemble the cork washer into the valve cage (Fig. 9), follow this with the plastic valve, spring side uppermost, and retain it with the circlip in its groove. Insert the inlet valve into the body of the pump, smooth face to seating, thread the inlet valve spring onto the valve cage, and tighten down firmly.
- 14. On earlier-type pumps assemble the brass valve disc to the valve cage, making sure that the smooth face of the disc faces the valve seat, retain it in position with the circlip which must be located in the groove in the valve cage. The valve must rattle freely when the cage is shaken.

Drop the inlet valve disc, smooth face downwards into the body. Screw in the valve cage and tighten down firmly.

Note.—Earlier-type valve cages can be identified by the lip that forms the valve seat.

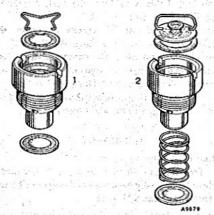


Fig. 9. The valve assembly, LCS type pump

Earlier type.

2. Later type

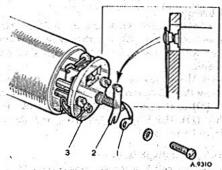


Fig. 10. Setting the correct relative position of blade and rocker contact points

- 15. Replace the upper cover and joint gasket.
- Insert the filter and replace the lower cover and joint gasket.

#### **Body attachment**

- Fit the diaphragm gasket, offer up the coil housing to the body, and ensure correct seating between them.
- 18. Line up the six securing screw holes, making sure that the two cast lugs on the coil housing are at the bottom, insert the six 2 B.A. screws finger-tight. Fit the earthing screw.
- 19. Remove the roller retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It not necessary to stretch the diaphragm before tightening the securing screws.
- Tighten the securing screws in sequence as they appear diametrically opposite each other.

#### Contact blade

- Fit the contact blade (2) (Fig. 10) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw. When a condenser is fitted the tag on it is placed under the coil lead tag.
- 22. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 10), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner.

As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.

 Tighten the contact blade attachment screw when the correct setting is obtained.

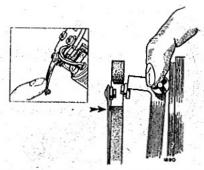


Fig. 11. Setting the contact blade to ensure contact with the pedestal ridge

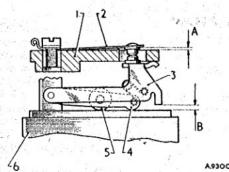


Fig. 12. The rocker finger settings on modified rocker assemblies

- Pedestal.
- Contact blade.
- 3. Outer rocker.
- A == .035 in. (.9 mm.).
- Inner rocker. 4.
- Trunnion.
- Coil housing.
- B--- 070 in. (1.8 mm.).

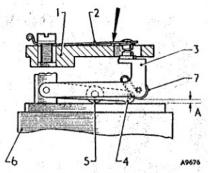


Fig. 13. The contact gap setting on earlier-type rocker assemblies

- Pedestal.
- Inner rocker.
- Contact blade.
- Trunnion.
- 3. Outer rocker.
- Coil housing.
- A=-030 in. (.8 mm.).

#### Contact gap settings

24. Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal (Fig. 11). If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

- 25. Check the lift of the contact blade tip above the top of the pedestal (A) (Fig. 12) with a feeler gauge, bending the stop-finger beneath the pedestal, if necessary, to obtain a lift of  $\cdot 035 \pm \cdot 005$  in. ( $\cdot 9 \pm \cdot 13$  mm.).
- 26. Check the gap between rocker finger and coil housing (B) (Fig. 12) with a feeler gauge, bending the stop-finger, if necessary, to obtain a gap of  $070\pm005$  in. (1.8 $\pm$  13 mm.).

#### Earlier-type rocker assemblies

27. Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip (see Fig. 13). Then check if a .030 in. (.8 mm.) feeler will pass between the fibre rollers and the face of the coll housing. If necessary the tip of the blade can be set to correct the gap.

#### End-cover

- 28. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and the insulated knob
- 29. The pump is now ready for test (see leaflet AUA 213 A). After test, replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.

Note.—The technical information contained in this Service Sheet supersedes any instruction previously published or authorized on this subject by the Company.



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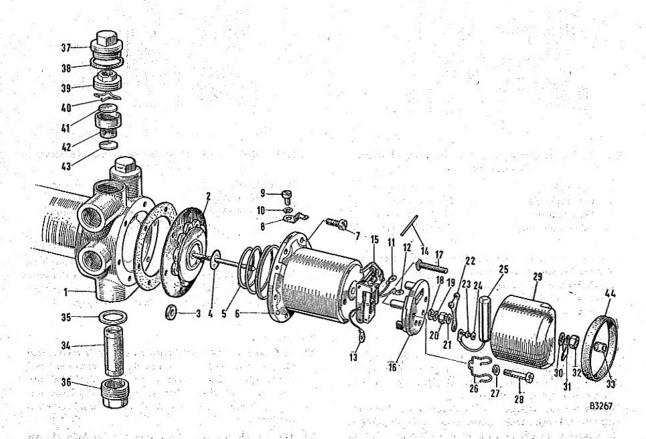
### THE S.U. CARBURETTER COMPANY LIMITED

Proprietors: MORRIS MOTORS LIMITED

WOOD LANE ERDINGTON BIRMINGHAM 24 TELEPHONE: ERDINGTON 7371 (9 lines) TELEGRAMS: CARBURFLEX, BIRMINGHAM



## THE S.U. TYPE L AND HP DUAL PUMP



No.	Description	No.	Description	No.	Description
1.	Pump body.	16.	Pedestal.	30.	Washer—shakeproof.
2.	Diaphragm and spindle assembly.	17.	Stud—terminal.	31.	Connector—Lucar.
3.	Roller-armature centralizing.	18.	Washer—spring.	- 32.	Nut—2 B.A.
4.	Washer-Impact.	19.	Washerlead.	33.	Sleeve-insulating.
5.	Spring—armature.	20.	Nut-terminal.	34.	Filter.
6.	Housing—coil.	21.	Washer-end cover seal.	35.	Washer-fibre.
7.	Screw-securing housing-2 B.A.	22.	Contact blade.	36.	Plug filter.
8.	Connector—earth.	23.	Washer—5 B.A.	37.	Plug-top.
9.	Screw—4 B.A.	24.	Screwcontact blade-5 B.A.	38.	Washer—fibre.
10.	Washer—spring—4 B.A.	25.	Condenser.	39.	Plug valve cage.
11.	Tag—terminal—5 B.A.	26.	Clip-condenser.	40.	Clip valve.
12.	Tag—terminal—2 B.A.		Washer—spring—2 B.A.	41.	Valve—outlet.
13.	Tag-earth-2 B.A.		Screw—pedestal to housing—	42.	Cage—outlet valve.
14.	Pin-rocker pivot.	20.	2 B.A.	43.	Valve—inlet.
15.	Rocker mechanism.	29.	End cover.	44.	Band—sealing.
			1 25 pt 15 p		

#### DISMANTLING

#### Contact breaker

- Remove the insulated knob or sleeve (33), terminal nut (32), and connector (31), together with its shakeproof washer. Remove the tape seal (if fitted) and take-off the end-cover.
- Unscrew the 5 B.A. screw (24) which holds the contact blade (22) to the pedestal (16) and remove the condenser (25) (if fitted) from its clip. This will allow the washer (23), the long-coil lead (11), and the contact blade to be removed.

#### Coll housing and diaphragm

- Unscrew the coll housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- 4. Remove the earthing screw (9). On earlier pumps a 2 B.A. earthing stud (Fig. 1) was fitted in the 9 o'clock position on 12-volt pumps, and in the 12 o'clock position on 6-volt pumps, looking at the front or pedestal end of the pump.
- 5. The coil housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall onto the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.

#### Pedestal and rocker

- 6. Remove the end-cover seal washer (21), unscrew the terminal nut (20), and remove the lead washer (19); this will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (28), holding the pedestal to the coil housing, remove the earth terminal tag (13) together with the condenser clip (26) (if fitted). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism attached.
- Push out the hardened steel pin (14) which holds the rocker mechanism to the pedestal and separate the two.
- Repeat the foregoing operations on the remaining coll housing and contact breaker assembly.

#### **Body** and valves

- Remove the inlet and outlet unions, the top plugs (37) and the outlet valve cage (42), together with the valves (41) and (43).
- 10. Remove the filter plug (36) and the filter (34).

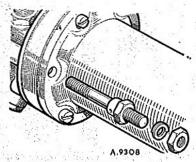


Fig. 1. The earthing stud on earlier pumps

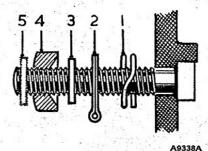


Fig. 2. The correct assembly of components on the terminal stud

#### INSPECTION

If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent. solution of caustic soda, dipped in a strong nitric acid solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- Remove the circlip in the outlet valve cage and examine the discs for wear. Scrap, if worn.
- Examine the valve seats in the body and outlet valve cages for damage and corrosion; if it is impossible to remove the corrosion, or if the seats are pitted, the body must be discarded.
- Clean the filter with a brush and examine for fractures, renew if necessary.
- Examine the coil lead tag for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- Examine the pedestal for cracks or other damage, particularly to the narrow ridge on the edge of the rectangular hole on which the contact blade rests.
- 8. Examine the diaphragms for signs of deterioration.
- Renew the following parts: all fibre washers, gaskets, and 'O' section sealing rings, rollers showing sign of wear on periphery, damaged bolts, and unions.

#### ASSEMBLY

#### Pedestal and rocker

**Note.** The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

1. Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 3) through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact point, the centre toggle spring is above the spindle on which the white rollers run (see Fig. 3). This positioning is important to obtain the correct 'throw over' action; it is also essential

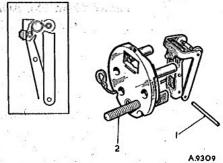


Fig. 3. Fitting the rocker assembly to the pedestal. (Inset) the correct position of the centre toggle spring

that the rockers are perfectly free to swing on the pivot pln and that the arms are not binding on the legs of the nedestal

If necessary the rockers can be squared up with a pair of thin-nosed pliers.

Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head.

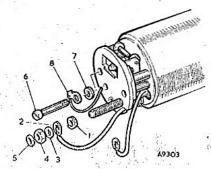


Fig. 4. Attaching the pedestal to the coil housing

- 3. Assemble the 2 B.A. spring washer (1) (Fig. 4), and put the terminal stud through the 2 B.A. terminal tag (2), then fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).
- 4. Assemble the pedestal to the coil housing (Fig. 4) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8). When a condenser is fitted, its wire clip base is placed under the earthing tag and the spring washer is dispensed with.
- 5. Tighten the screws, taking care to prevent the earthing

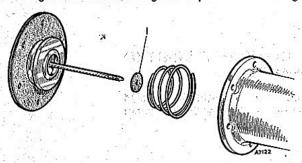


Fig. 5. Fitting the diaphragm to the coil housing. Note the impact washer (1)

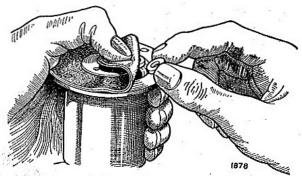


Fig. 6. Inserting the diaphragm centralizing rollers

tag (8) from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack.

Do not fit the contact blade at this stage.

#### Diaphragm assembly

- 6. Place the armature spring into the coil housing with its larger diameter towards the coil (Fig. 5).
- Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over'; this must not be confused with jamming the armature on the coil housing internal steps.
- 10. Fit the 11 brass centralizing rollers (Fig. 6) by turning back the diaphragm edge and dropping the rollers into the coil recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

11. Holding the coil housing assembly in the left hand in an approximately horizontal position (see Fig. 7), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.

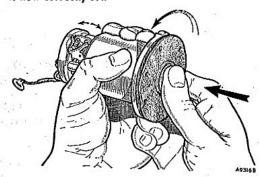


Fig. 7. Setting the diaphragm. Unscrew until the rocker just 'throws over'

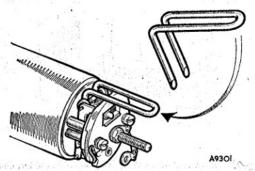


Fig. 8. Fitting the roller retaining fork

- 12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 8). This is done to prevent the rollers from falling out when the coil housing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.
- 13. Repeat these operations on the remaining coil and contact breaker assembly.

#### **Body components**

Note.—The main body assemblies of single and dual L and HP pumps are similar, variations being mainly concerned with the size and type of inlet and outlet connections and valve assemblies. On dual pumps the inlet valve seat is formed by the end of a brass tube, and the sandwich plate used on single pumps is not fitted. Again, although the valve assembly on dual pumps is similar to the single, fibre washers are not fitted on the top and bottom faces of the valve cage as the cage is retained by valve plugs and not by the outlet union.

- 14. Assemble the brass valve disc (3) (Fig. 9) to the outlet valve cage (2), making sure that the smooth face of the disc faces the valve seat, retain it in position with the circlip (4), which must be located in the groove in the valve cage. The valve should rattle freely when the valve cage is shaken.
- 15. Drop the other valve disc (1) (Fig. 9), smooth face downwards, onto the inlet valve seat in the body of the pump, drop the valve cage (2) in position, then screw in the valve plug (5) and tighten with a \(\frac{3}{6}\)-in. Whitworth ring or box spanner. Fit the valve plug cap (7) and washer (6). Fit the inlet and outlet unions.

#### **Body attachment**

If a barrier diaphragm is fitted a joint gasket is used between it and the pump body.

- Offer up the coil housing to the body and ensure correct seating between them.
- 17. Line up the six securing screw holes, making sure that the

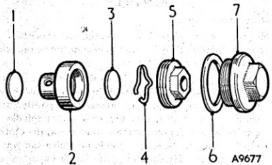


Fig. 9. The valve assembly L and HP dual pumps

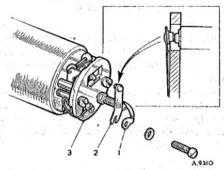


Fig. 10. Setting the correct relative position of blade and rocker contact points

two cast lugs on the coil housing are at the bottom, insert the six 2 B.A. screws finger-tight. Fit the earthing screw with its Lucar connector.

Note. Earlier L and HP dual pumps have an earthing stud fitted in the 9 o'clock position (see Fig. 1).

- Repeat the attachment procedure for the other coil housing assembly.
- 19. Remove the roller retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It not necessary to stretch the diaphragm before tightening the securing screws.
- 20. Tighten the securing screws in sequence as they appear diametrically opposite each other.

#### Contact blade

- 21. Fit the contact blade (2) (Fig. 10) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw. When a condenser is fitted the tag on it is placed under the coil lead tag.
- 22. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 10), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner.

As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.

 Tighten the contact blade attachment screw when the correct setting is obtained.

#### Contact gap setting

24. Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal (Fig. 11), if it does not, slacken the contact blade

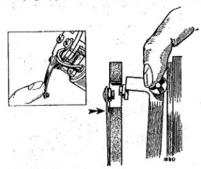


Fig. 11. Setting the contact blade to ensure contact with the pedestal ridge

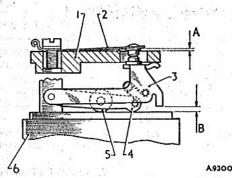


Fig. 12. The rocker finger settings on modified rocker assemblies

- 1. Pedestal.
- 4. Inner rocker.
- 2. Contact blade.
- 5. Trunnion.
- Outer rocker.
   A=.035 in. (.9 mm.).
- Coll housing.
   B= 070 in. (1.8 mm.).

attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

- 25. Check the lift of the contact blade tip above the top of the pedestal (A) (Fig. 12) with a feeler gauge, bending the stop-finger beneath the pedestal, if necessary, to obtain a lift of .035±.005 in. (.9±.13 mm.).
- 26. Check the gap between rocker finger and coil housing (B) (Fig. 12) with a feeler gauge, bending the stop-finger, if necessary, to obtain a gap of 070±005 in. (1.8±.13 mm.).

#### Earlier-type rocker assemblies

27. Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal

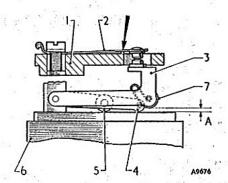


Fig. 13. The contact gap setting on earlier-type rocker assemblies

- 1. Pedestal.
- 4. Inner rocker.
- 2. Contact blade.
- 5. Trunnion.
- 3. Outer rocker.
- Coil housing.

A= 030 in. (8 mm.).

without pressing against the tip (see Fig. 13). Then check if a 030 in. (8 mm.) feeler will pass between the fibre rollers and the face of the coll housing. If necessary the tip of the blade can be set to correct the gap.

#### End-cover

- 28. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and the insulated knob or sleeve.
- 29. The pump is now ready for test (see leaflet AUA 213 A).

After test replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.

Note.—The technical information contained in this Service Sheet supersedes any instruction previously published or authorized on this subject by the Company.



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## DISMANTLING AND REASSEMBLING INSTRUCTIONS

MANUFACTURED by

#### THE S.U. CARBURETTER COMPANY LIMITED

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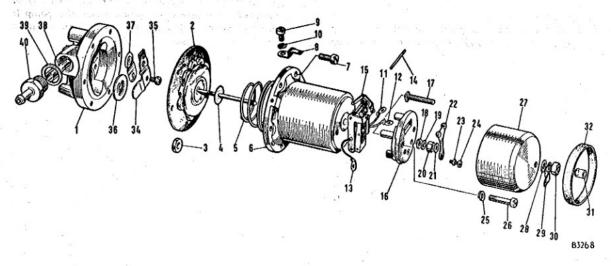
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TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM



## THE S.U. TYPE SP PUMP



No.	Description	No.	Description	No.	Description
1.	Pump body.	14.	Pin-rocker pivot.	27.	End cover.
2.	Diaphragm and spindle assembly.	15.	Rocker mechanism.	28.	Washer-shakeproof.
3.	Roller-armature centralizing.	16.	Pedestal.	29.	Connector-Lucar.
4.	Washer-Impact.	17.	Stud-terminal.	30.	Nut-2 B.A.
5.	Spring-armature.	18.	Washer-spring.	31.	Sleeve-insulating.
6.	Housing-coll.	19.	Washer-lead.	32.	Band-sealing.
7.	Screw-securing housing-2 B.A.	20.	Nut-terminal.	34.	Plate-valve retaining.
8.	Connector-earth.	21,	Washer-end cover seal.	35.	Screw-plate.
9.	Screw-earth-4 B.A.	22.	Contact blade.	36.	Valve-outlet.
10.	Washer-spring-2 B.A.	23.	Washer 5 B.A.	37.	Valve-inlet.
11.	Tagterminal5 B.A.	24.	Screw-contact blade-5 B.A.	38.	Filter.
12.	Tag-terminal-4 B.A.	25.	Washer-spring-2 B.A.	39.	Washer-fibre.
13.	Tag-earth-2 B.A.	26.	Screw2 B.A.	40.	Connection inlet.

#### DISMANTLING

#### Contact breaker

- Remove the insulated sleeve (31), terminal nut (30), and connector (29), together with its shakeproof washer.
   Remove the tape seal (if fitted) and take-off the end-cover.
- Unscrew the 5 B.A. screw (24) which holds the contact blade (22) to the pedestal (16), and this will allow the washer (23), the long-coll lead (11), and the contact blade to be removed.

#### Coll housing and diaphragm

- Unscrew the coll housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- 4. Remove the earthing screw (9).
- 5. The coll housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coll housing, it is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall onto the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.

#### Pedestal and rocker

- 6. Remove the end-cover seal washer (21), unscrew the terminal nut (20), and remove the lead washer (19); this will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (26), holding the pedestal to the coil housing, remove the earth terminal tag (13). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism (15) attached.
- 7. Push out the hardened steel pin (14) which holds the

#### Body and valves

8. Unscrew the Inlet union (40) and remove the filter (38).
Unscrew the Phillips screw (35) and take out the two
valve assemblies (36) and (37).

#### INSPECTION

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If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent. solution of caustic soda, dipped in a strong nitric acid

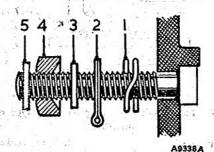


Fig. 1. The correct assembly of components on the terminal stud

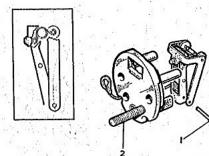


Fig. 2. Fitting the rocker assembly to the pedestal. (Inset) the correct position of the centre toggle spring

solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- 2. Examine the outlet valve for damage. Check that the centre rivet is tight and that the light spring has not unwound, but is still holding the plastic valve disc on its seating. The valve disc should be free to lift, and not be trapped under the rivet shoulder. There must be no kinks or marks which might cause it to fail to seat.
- Examine the inlet valve assembly for kinks or damage; the slight removal of colouring matter is of no importance as it is present only to permit the valve to be seen more easily.
- Examine the valve seats in the body for damage and corrosion; if it is impossible to remove the corrosion, or if the seat is pitted, the body must be discarded.
- Clean the filter with a brush, examine for fractures, renew if necessary.
- Examine the coil lead tag for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- Examine the pedestal for cracks or other damage, particularly to the narrow ridge on the edge of the rectangular hole on which the contact blade rests,
- 9. Examine the diaphragm for signs of deterioration.
- Renew the following parts: all fibre washers, gaskets, and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts, and unions.

#### ASSEMBLY

#### Pedestal and rocker

Note. The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

1. Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 2) through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact point, the centre toggle spring is above the spindle on which the white rollers run. This positioning is important to obtain the correct 'throw over' action; it is also essential that the rockers are perfectly free to swing on the pivot pin and that the arms are not binding on the legs of the pedestal.

If necessary the rockers can be squared up with a pair of thin-nosed pliers.

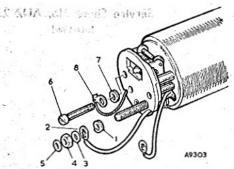


Fig. 3. Attaching the pedestal to the coil housing

- Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head.
- 3. Assemble the 2 B.A. spring washer (1) (Fig. 3), and put the terminal stud through the 2 B.A. terminal tag (2), then fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).

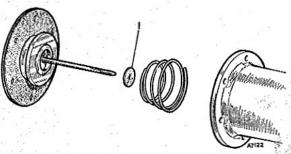


Fig. 4. Fitting the diapuragm to the coil housing. Note the impact washer (1)

- Assemble the pedestal to the coil housing (Fig. 3) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8).
- Tighten the screws, taking care to prevent the earthing tag (8) from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack.

Do not fit the contact blade at this stage.

#### Diaphragm assembly

Place the armature spring into the coll housing with its larger diameter towards the coll (Fig. 4).



Fig. 5. Inserting the diaphragm centralizing rollers

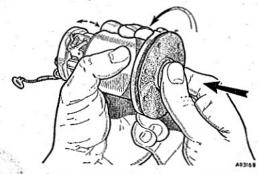


Fig. 6. Setting the diaphragm. Unscrew until the rocker just 'throws over'

- 7. Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over'; this must not be confused with jamming the armature on the coll housing internal steps.
- 10. Fit the 11 brass centralizing rollers (Fig. 5) by turning back the diaphragm edge and dropping the rollers into the coil recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

- 11. Holding the coil housing assembly in the left hand in an approximately horizontal position (see Fig. 6), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- 12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 7). This is done to prevent the rollers from falling out when the coil housing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

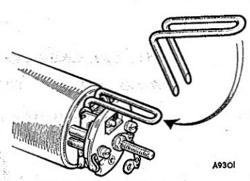


Fig. 7. Fitting the roller retaining fork

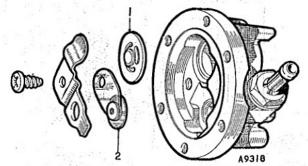


Fig. 8. The valve assembly, SP pumps

- 1. Outlet
- 2. Inlet

**Body components** 

- 13. Insert the filter into the recess in the inlet union before screwing it, with its fibre washer, into the pump body. This will lessen the risk of the tip of the filter being forced into the valve recess and lifting the valve from its seating.
- 14, Place the outlet valve assembly into its recess (see Fig. 8), spring downwards, making sure that it sits evenly on the seating in the body, on which it will be held permanently in contact by the clamp plate. Tighten the Phillips screw, making sure that the inlet valve disc is centralized on its seating.

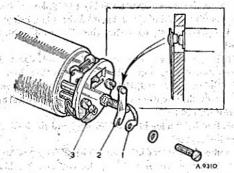


Fig. 9. Setting the correct relative position of blade and

**Body attachment** 

- 15. Line up the six securing screw holes, making sure that the cast lugs on the coll housing are at the bottom. Insert the six 2 B.A. screws finger-tight. Fit the earthing screw with its Lucar connector.
- 16. Remove the roller retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the

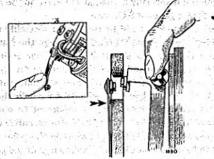


Fig. 10. Setting the contact blade to ensure contact with the pedestal ridge

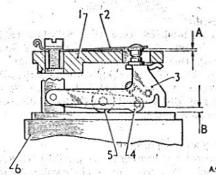


Fig. 11. The rocker finger settings on modified rocker assemblies

- 1. Pedestal.
- 2. Contact blade.
- 3. Outer rocker.
- A=-035 in. (-9 mm.).
- 4. Inner rocker.
- 5. Trunnlon.
- 6. Coil housing.
- B= 070 In. (1.8 mm.).

diaphragm. It is not necessary to stretch the diaphragm before tightening the securing screws.

 Tighten the securing screws in sequence as they appear diametrically opposite each other.

#### Contact blade

- Fit the contact blade (2) (Fig. 9) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw.
- 19. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 9), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner.

As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.

Tighten the contact blade attachment screw when the correct setting is obtained.

Contact gap setting

21. Check that when the outer rocker is pressed on to the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal (Fig. 10). If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when

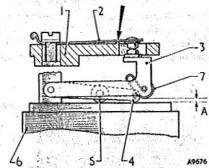


Fig. 12. The contact gap setting on earlier-type rocker

- 1. Pedestal.
- 4. Inner rocker.
- 2. Contact blade.
- 5. Trunnion.
- Outer rocker.
- 6. Coll housing.

A=-030 In. (-8 mm.).

repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

- Check the lift of the contact blade tip above the top of the pedestal (A) (Fig. 11) with a feeler gauge, bending the stop-finger beneath the pedestal, if necessary, to obtain a lift of .035±.005 in. (.9±.13 mm.).
- 23. Check the gap between rocker finger and coil housing (B) (Fig. 12) with a feeler gauge, bending the stop-finger, if necessary, to obtain a gap of .070±.005 in. (1.8±.13 mm.).

#### Earlier-type rocker assemblies

 Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip (see Fig. 12). Then check if a ·030 in. (·8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary the tip of the blade can be set to correct the gap.

#### End-cover

- 25. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and the insulated knob.
- 26. The pump is now ready for test (see leaflet AUA 213 A). After test replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.

Note.—The technical information contained in this Service Sheet supersedes any instruction previously published or authorized on this subject by the Company.

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(SPECIFICATION RANGE: AUF 200 TO AUF 299)

## DISMANTLING AND REASSEMBLING INSTRUCTIONS

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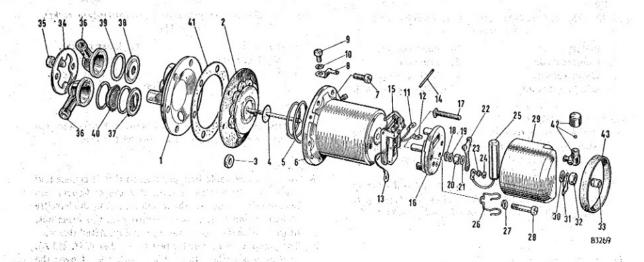
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#### THE S.U. TYPE AUF 200 RANGE PUMP



No. Description	1 4
1509945 37	
<ol> <li>Pump body.</li> </ol>	

- 2. Diaphragm and spindle assembly.
- 3. Roller-armature centralizing.
- 4. Washer-impact.
- 5. Spring--armature.
- 6. Housing-coil.
- 7. Screw-securing housing-2 B.A.
- 8. Connector-earth.
- 9. Screw-4 B.A.
- 10. Washer-spring-4 B.A.
- 11. Tag-terminal-5 B.A.
- 12. Tag-terminal-2 B.A.
- 13. Tag--earth-2 B.A.
- 14. Pin-rocker pivot.
- 15. Rocker mechanism.

- No. Description
- 16. Pedestal,
- 17. Stud-terminal.
- 18. Washer-spring.
- 19. Washer-lead.
- 20. Nut-terminal.
- 21. Washer-end cover seal.
- 22. Contact blade.
- 23. Washer-5 B.A.
- 24. Screw-contact blade-5 B.A.
- 25. Condenser.
- 26. Clip-condenser.
- 27. Washer-spring-2 B.A.
- 28. Screw—pedestal to housing— 2 B.A.
- 29. End cover.

- No. Description
- 30. Washer-shakeproof.
- 31. Connector-Lucar.
- 32. Nut-2 B.A.
- 33. Sleeve-Insulating.
- 34. Clamp-plate.
- 35. Screw-securing-2 B.A.
- 36. Nozzle-inlet and outlet.
- 37. Valve-inlet.
- 38. Valve-outlet.
- 39. Washer-sealing.
- 40. Filter.
- 41. Gasket.
- 42. Vent valve.
- 43. Band--sealing.

#### DISMANTLING

#### Contact breaker

- Remove the insulated sleeve (33), terminal nut (32), and connector (31), together with its shakeproof washer.
   Remove the tape seal (if fitted) and take off the end-cover.
- Unscrew the 5 B.A. screw (24) which holds the contact blade (22) to the pedestal (16) and remove the condenser (25) (if fitted) from its clip. This will allow the washer (23) the long-coil lead (11), and the contact blade to be removed.

#### Coil housing and diaphragm

- Unscrew the coil housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- 4. Remove the earthing screw (9).
- 5. The coil housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall onto the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.

#### Pedestal and rocker

- 6. Remove the end-cover seal washer (21), unscrew the terminal nut (20), and remove the lead washer (19); this will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (28), holding the pedestal to the coil housing, remove the earth terminal tag (13) together with the condenser clip (26) (if fitted). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism (15) attached.
- 7. Push out the hardened steel pin (14) which holds the

#### **Body** and valves

8. Unscrew the two 2 B.A. screws (35) securing the spring clamp plate (34) holding the inlet and outlet nozzles (36), Remove the nozzles, filter (40), and valve assemblies (37) and (38).

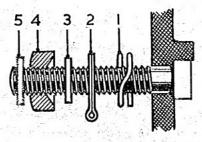
#### INSPECTION

If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel



A.9304

Fig. 1. The valve (inlet and outlet)  $A = \frac{1}{16} \text{ In. (1.6 mm.)}$ 



A9338A

Fig. 2. The correct assembly of components on the terminal stud

parts so affected can be cleaned by being boiled in a 20 per cent. solution of caustic soda, dipped in a strong nitric acid solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- Examine the plastic valve assemblies (Fig. 1) for kinks or damage to the valve plates. They can best be checked by blowing and sucking with the mouth.
- Check that the narrow tongue on the valve cage, which
  is bent over to retain the valve and to prevent it being
  forced out of position, has not been distorted but
  allows a valve lift of approximately is in. (1-6 mm.).
- Examine the valve recesses in the body for damage and corrosion; if it is impossible to remove the corrosion, or if the seat is pitted, the body must be discarded.
- 5. Ensure that the coil housing vent tube is not blocked.
- Clean the filter with a brush and examine for fractures, renew if necessary.
- Examine the coil lead tag for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- 9. Examine the pedestal for cracks or other damage, particularly to the narrow ridge on the edge of the rectangular hole on which the contact blade rests.
- Examine the non-return vent valve in the end-cover (if fitted) for damage. Ensure that the small ball valve is free to move.
- 11. Examine the diaphragm for signs of deterioration.
- Renew the following parts: All fibre and cork washers, gaskets, and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts, and unions.

#### ASSEMBLY

#### Pedestal and rocker

Note. The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

1. Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 3) through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact point, the centre toggle spring is above the spindle on which the white rollers run (see Fig. 3). This positioning is important to obtain the correct 'throw over' action; it is also essential that the rockers are perfectly free to swing on the pivot

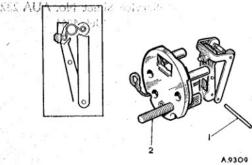


Fig. 3. Fitting the rocker assembly to the pedestal. (Inset) the correct position of the centre toggle spring

pin and that the arms are not binding on the legs of the pedestal.

If necessary the rockers can be squared up with a pair of thin-nosed pliers.

 Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head

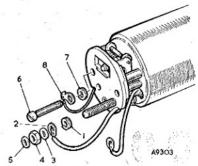


Fig. 4. Attaching the pedestal to the coil housing

- 3. Assemble the 2 B.A. spring washer (1) (Fig. 4), and put the terminal stud through the 2 B.A. terminal tag (2), then fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).
- 4. Assemble the pedestal to the coil housing (Fig. 4) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8). When a condenser is fitted, its wire clip base is placed under the earthing tag and the spring washer is dispensed with.
- 5. Tighten the screws, taking care to prevent the earthing

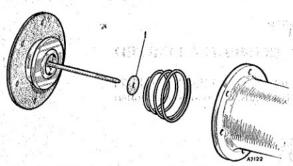


Fig. 5. Fitting the diaphragm to the coil housing. Note the impact washer (1)



Fig. 6. Inserting the diaphragm centralizing rollers

tag (8) from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack.

Do not fit the contact blade at this stage.

#### Diaphragm assembly

- Place the armature spring into the coll housing with its larger diameter towards the coil (Fig. 5).
- Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over'; this must not be confused with jamming the armature on the coll housing internal steps.
- Fit the 11 brass centralizing rollers (Fig. 6) by turning back the diaphragm edge and dropping the rollers into the coil recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

11. Holding the coil housing assembly in the left hand in an approximately horizontal position (see Fig. 7), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.

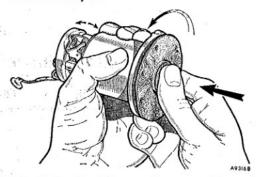


Fig. 7. Setting the diaphragm. Unscrew until the rocker just 'throws over'

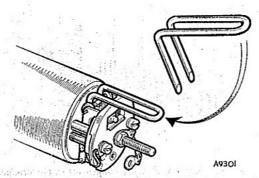


Fig. 8. Fitting the roller retaining fork

12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 8). This is done to prevent the rollers from falling out when the coil housing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

#### Body components

- 13. In the AUF 200 range of pumps, inlet and outlet valves are identical assemblies and are held in position in the one-piece body casting by a steel spring clamp plate secured by two 2 B.A. screws. This plate also secures the inlet and outlet nozzles, including the filter, all of which are arranged to be accessible from the outside of the pump (see Fig. 9). The inlet recess is deeper than the outlet to allow for the filter and extra washer.
- 14. Referring to Fig. 9, place the outlet valve assembly, tongue side uppermost, in the recess marked 'outlet', place a joint washer on top of the valve assembly, and complete by adding the outlet nozzle.
- 15. Place the Inlet valve assembly, tongue side downwards, in the recess marked 'Inlet', follow this with a joint washer, then the filter, dome side upwards, then another joint washer, completing the assembly with the inlet nozzle.
- 16. Take care that both assemblies nest down evenly into their respective recesses. Position the nozzles as required, place the clamp plate on top, and tighten down firmly onto the body with the two 2 B.A. screws.

#### Body attachment

- 17. Offer up the coil housing to the body, ensuring correct seating between them.
- 18. Line up the six securing screw holes, making sure that the cast lugs on the coll housing are at the bottom,

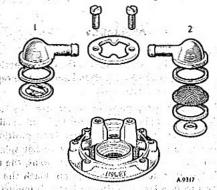


Fig. 9. The valve assembly, AUF 200 range pump

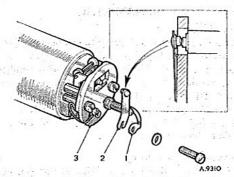


Fig. 10. Setting the correct relative position of blade and rocker contact points

Insert the six 2 B.A. screws finger-tight. Fit the earthing screw with its Lucar connector.

- 19. Remove the roller retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It is not necessary to stretch the diaphragm before tightening the securing screws.
- Tighten the securing screws in sequence as they appear diametrically opposite each other.

#### Contact blade

- 21. Fit the contact blade (2) (Fig. 10) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw. When a condenser is fitted the tag on it is placed under the coil lead tag.
- 22. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 10), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner.

As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.

 Tighten the contact blade attachment screw when the correct setting is obtained.

#### Contact gap setting

24. Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal (Fig. 11). If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

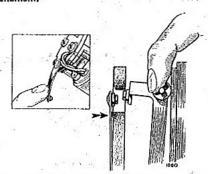


Fig. 11. Setting the contact blade to ensure contact with the pedestal ridge

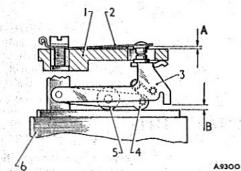


Fig. 12. The rocker finger settings on modified rocker assemblies

- 1. Pedestal.
- 2. Contact blade.
- 3. Outer rocker.
- A= .035 in. (.9 mm.).
- 4. Inner rocker.
- 5. Trunnion.
- 6. Coll housing.
- B== .070 In. (1.8 mm.).

#### Modified rocker assemblies

- 25. Check the lift of the contact blade tip above the top of the pedestal (A) (Fig. 12) with a feeler gauge, bending the stop-finger beneath the pedestal, if necessary, to obtain a lift of .035±.005 in. (.9±.13 mm.).
- 26. Check the gap between rocker finger and coll housing (B) (Fig. 12) with a feeler gauge, bending the stop-finger, if necessary, to obtain a gap of -070 ± -005 in. (1-8 ± -13 mm.).

#### Earlier-type rocker assemblies

27. Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip (see Fig. 13). Then check if a ·030 in. (·8 mm.) feeler will pass between the fibre

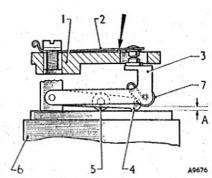


Fig. 13. The contact gap setting on earlier-type rocker assemblies

- 1. Pedestal.
- 4. Inner rocker,
- 2. Contact blade.
- . Trunnion.
- 3. Outer rocker.
- 6. Coll housing.

A==-030 in. (-8 mm.).

rollers and the face of the coll housing. If necessary the tip of the blade can be set to correct the gap.

#### End-cover

- 28. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and insulated sleeve.
- 29. The pump is now ready for test (see leaflet AUA 213 A). After test replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.

Note.—The technical information contained in this Service Sheet supersedes any instruction previously published or authorized on this subject by the Company.

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(SPECIFICATION RANGE: AUF 300 TO AUF 399)

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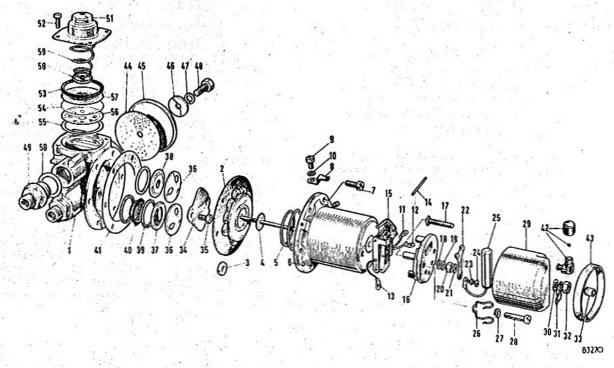
TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM

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### THE S.U. TYPE AUF 300 RANGE PUMP



No.	Description	No.	Description	No.	Description
1.	Pump body.	21.	Washer-end cover seal.	<b>41</b> .	Gasket-diaphragm.
2.	Diaphragm and spindle assembly.	22.	Contact blade.	42.	Vent valve.
3.	Roller—armature centralizing.	23.	Washer-5 B.A.	43.	Band-sealing.
4.	Washer—impact.	24.	Screw-contact blade-5 B.A.	44.	Joint-inlet air bottle cover.
s. ·	Spring—armature.	25.	Condenser.	45.	Cover-inlet air bottle.
6.	Housing-coil.	26.	Clipcondenser.	46.	Washer-dished.
7.	Screw—securing housing—2 B.A.	27.	Washer—spring—2 B.A.	47.	Washer-spring.
8.	Connector-earth.	28.	Screw—pedestal to housing—2 B.A.	48.	Screw—securing cover.
9.	Screw-4 B.A.	29.	End cover.	49.	Connection—outlet.
10.	Washer-spring-4 B.A.	30.	Washer-shakeproof.	50.	Washer—fibre.
11,	Tag-terminal-5 B.A.	31.	Connector—Lucar.	51.	Cover-delivery flow smoothing
12.	Tag-terminal-2 B.A.	32.	Nut-2 B.A.		device.
13.	Tagearth-2 B.A.	33.	Sleeve—insulating.	52.	Screw—securing cover.
14.	Pin-rocker-pivot.	34.	Plate—clamp.	53.	'O' ring—rubber.
15.	Rocker mechanism.	35.	Screw—plate.	54.	Diaphragm barrier—plastic.
16.	Pedestal.	36.	Cap—valve.	55.	Washer-sealing.
17.	Stud-terminal.	37.	Valve—Inlet.	56.	Plate-diaphragm.
18.	Washer-spring.	38.	Valve-outlet.	57.	Diaphragm—rubber.
19.	Washer-lead.	39.	Washer-sealing.	58.	Cap—spring end.
20.	Nut-terminal.	40.	Filter.	59.	Spring-diaphragm.

#### DISMANTLING

#### Contact breaker

- Remove the insulated sleeve (33), terminal nut (32), and connector (31), together with its shakeproof washer.
   Remove the tape seal (if fitted) and take off the end-cover.
- Unscrew the 5 B.A. screw (24) which holds the contact blade (22) to the pedestal (16) and remove the condenser (25) (if fitted) from its clip. This will allow the washer (23), the long-coil lead (11), and the contact blade to be removed.

#### Coll housing and diaphragm

- Unscrew the coil housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- 4. Remove the earthing screw (9).
- 5. The coil housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall on the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.

#### Pedestal and rocker

- 6. Remove the end-cover seal washer (21), unscrew the terminal nut (20), and remove the lead washer (19). This will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (28), holding the pedestal to the coil housing, remove the earth terminal tag (13) together with the condenser clip (26) (if fitted). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism (15) attached.
- 7. Push out the hardened steel pin (14) which holds the rocker mechanism to the pedestal and separate the two.

#### **Body and valves**

Market Mark

- Unscrew the two Phillips screws (35) securing the valve clamp plate (34), remove the valve caps (36), valves (37) and (38), sealing washers, and filter (40).
  - Note. Dismantling of the delivery flow-smoothing device should only be undertaken if the operation of it is faulty, and if the necessary equipment for pressure-testing after assembly is available. On this understanding proceed as follows:
- Remove the four 4 B.A. screws (52) securing the delivery flow-smoothing device vented cover (51), remove the



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Fig. 1. The valve (inlet and outlet)

A= 1/6 in. (1.6 mm.)

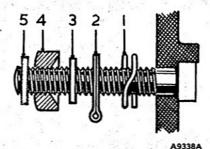


Fig. 2. The correct assembly of components on the terminal stud

- cover, the diaphragm spring (59), rubber 'O' ring (53), spring cap (58), diaphragm (57), barrier (54), diaphragm plate (56) and sealing washer (55).
- Remove the single 2 B.A. screw (48), securing the inlet air bottle cover (45). Remove the cover and gasket (44).
- 11. Unscrew the inlet and outlet connections.

#### INSPECTION

If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent, solution of caustic soda, dipped in a strong nitric acid solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- Examine the plastic valve assemblies for kinks or damage to the valve plates. They can best be checked by blowing and sucking with the mouth,
- Check that the narrow tongue on the valve cage, which is bent over to retain the valve and to prevent it being forced out of position, has not been distorted but allows a valve lift of approximately 75 in. (1-6 mm.). (see Fig. 1).
- Examine the delivery flow-smoothing device diaphragm, barrier, plate, spring, and spring cap for damage. If in doubt, renew the diaphragm.
- 5. Examine the inlet air bottle cover for damage.
- Examine the valve recesses in the body for damage and corrosion; if it is impossible to remove the corrosion, or if the recess is pitted, the body must be discarded.
- Clean the filter with a brush and examine for fractures, renew if necessary.
- Examine the coil lead tag for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- Examine the pedestal for cracks or other damage, in particular to the narrow ridge on the edge of the rectangular hole on which the contact blade rests.
- If fitted, examine the non-return vent valve in the endcover for damage, ensure that the small ball valve is free to move.
- 12. Examine the diaphragm for signs of deterioration.
- Renew the following parts: all fibre and cork washers, gaskets, and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts, and unions.

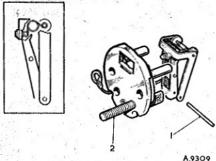


Fig. 3. Fitting the rocker assembly to the pedestal. (Inset) the correct position of the centre toggle spring

#### **ASSEMBLY**

#### Pedestal and rocker

Note. The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

1. Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 3) through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact point, the centre toggle spring is above the spindle on which the white rollers run. This positioning is important to obtain

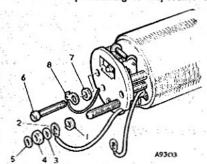


Fig. 4. Attaching the pedestal to the coil housing

the correct 'throw over' action; it is also essential that the rockers are perfectly free to swing on the pivot pin and that the arms are not binding on the legs of the pedestal.

If necessary the rockers can be squared up with a pair of thin-nosed pliers.

- Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head.
- Assemble the 2 B.A. spring washer (1) (Fig. 4), and put the terminal stud through the 2 B.A. terminal tag (2), then

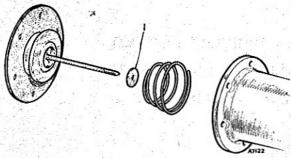


Fig. 5. Fitting the diaphragm to the coil housing. Note the impact washer (1)



Fig. 6. Inserting the diaphragm centralizing rollers

fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).

- 4. Assemble the pedestal to the coil housing (Fig. 4) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8). When a condenser is fitted, its wire clip base is placed under the earthing tag and the spring washer is dispensed with.
- Tighten the screws, taking care to prevent the earthing tag (8) from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack.

Do not fit the contact blade at this stage.

#### Diaphragm assembly

- Place the armature spring into the coil housing with its larger diameter towards the coil (Fig. 5).
- Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over'; this must not be confused with jamming the armature on the coil housing internal steps.
- Fit the 11 brass centralizing rollers (Fig. 6) by turning back the diaphragm edge and dropping the rollers into the coll recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger

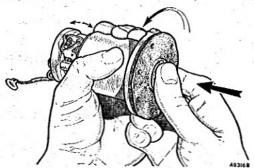


Fig. 7. Setting the diaphragm. Unscrew until the rocker just 'throws over'

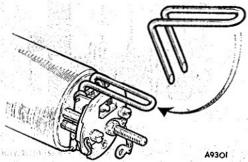


Fig. 8. Fitting the roller retaining fork

settings as described under those headings, then carefully remove the contact blade.

- 11. Holding the coil housing assembly in the left hand in an approximately horizontal position (see Fig. 7), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- 12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 8). This is done to prevent the rollers from falling out when the coil nousing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

#### **Body components**

13. In the AUF 300 range of pumps the valve assemblies are retained internally in the body by a clamp plate secured with self-tapping screws (see Fig. 9). The inlet valve recess in the body is deeper than the outlet recess to allow for the filter and extra washer. Another feature of these pumps is the incorporation of an air bottle on the inlet and a flow-smoothing device on the delivery side.

The inlet air bottle is a chamber in the body casting blanked off by a simple cover and joint washer held by a single screw. The delivery flow-smoothing device is formed by a perforated metal plate which is in contact with a plastic barrier backed by a rubber diaphragm, all held in position by a spring and end-cap retained by a vented cover. This assembly seals the delivery chamber in the body.

14. Screw in the inlet and outlet connections with their sealing rings. Assemble the outlet valve components into the outlet recess in the following order, first a joint

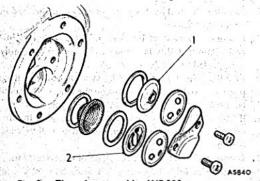


Fig. 9. The valve assembly, AUF 300 range pumps

1. Outlet valve.

2. Inlet valve.

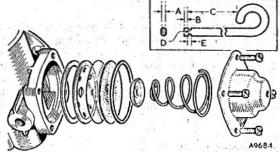


Fig. 10. The delivery flow smoothing device. AUF 300 range pumps. (Inset enlarged) an assembly tool made from  $\frac{1}{8}$  in. (3 mm.) dia. (10 s.w.g.) iron wire. A, B, and  $E = \frac{1}{16}$  in. (1-6 mm.), C = 2 in. (50 mm.), D = 090 in. (2 mm.)

washer, then the valve, tongue side downwards, then the valve cap.

- 15. Assemble the inlet valve into the inlet recess as follows: first a joint washer, then the filter, dome side downwards, then another joint washer, followed by the valve assembly, tongue side upwards, then the valve cap.
- 16. Take care that both valve assemblies nest down into their respective recesses, place the clamp plate on top, and tighten down firmly to the body with the two screws.
- Replace the inlet air bottle cover with its joint washer and tighten down the central screw.
- 18. Place the sealing washer in the bottom of the delivery flow-smoothing device recess, (see Fig. 10) follow this with the perforated diaphragm plate, dome side downwards, then the plastic barrier, followed by the rubber diaphragm, insert the 'O' section sealing ring into the recess and ensure that it seats evenly. Place the diaphragm spring, large end towards the vented cover, into the cover, place the spring end-cap on the small end of the spring, pass the assembly tool (see inset) through the cover, spring, and end cap and turn it through 90° so that tension may be applied to the spring during assembly. Finally fit the spring and cap assembly onto the diaphragm, tighten the four retaining screws, and release the assembly tool. The pump should be pressure-tested after disturbance of the flow-smoothing device.

#### Body attachment

- 19. Fit the joint washer to the body, aligning the screw holes.
- Offer up the coll housing to the body, ensuring correct seating between them.
- Line up the six securing screw holes, making sure that the
  cast lugs on the coil housing are at the bottom, insert the
  six 2 B.A. screws finger-tight. Fit the earthing screw with
  Its Lucar connector.

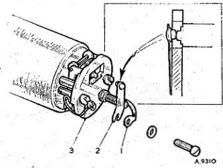


Fig. 11. Setting the correct relative position of blade and rocker contact points

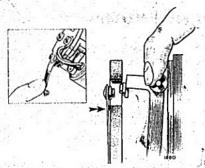


Fig. 12. Setting the contact blade to ensure contact with the pedestal ridge

- 22. Remove the roller retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It is not necessary to stretch the diaphragm before tightening the securing screws.
- Tighten the securing screws in sequence as they appear diametrically opposite each other.

#### Contact blade

- 24. Fit the contact blade (2) (Fig. 11) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw. When a condenser is fitted the tag on it is placed under the coil lead tag.
- 25. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 11), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner. As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.
- Tighten the contact blade attachment screw when the correct setting is obtained.

#### Contact gap setting

27. Check that when the outer rocker is pressed onto the coll housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal (Fig. 12). If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

- 28. Check the lift of the contact blade tip above the top of the pedestal (A) (Fig. 13) with a feeler gauge, bending the stop-finger beneath the pedestal, if necessary, to obtain a lift of -035±3005 in. (-9±-13 mm.).
- Check the gap between rocker finger and coil housing (B) (Fig. 13) with a feeler gauge, bending the stop-finger, if necessary, to obtain a gap of 070±005 in. (1.8±.13 mm.).

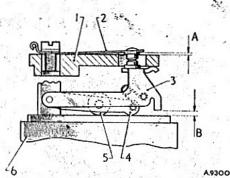


Fig. 13. The rocker finger settings on modified rocker assemblies

- 1. Pedestal.
- 2. Contact blade.
- 3. Outer rocker.
- A=-035 in. (-9 mm.).
- 4. Inner rocker.
- 5. Trunnion.
- 6. Coil housing.
- B=-070 in. (1-8 mm.).

#### Earlier-type rocker assemblies

30. Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip (see Fig. 14). Then check if a ·030 in. (·8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary the tip of the blade can be set to correct the gap.

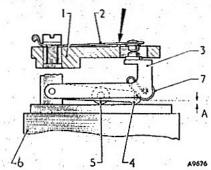


Fig. 14. The contact gap setting on earlier-type rocker assemblies

- 1. Pedestal.
- 4. Inner rocker.
- 2. Contact blade.
- 5. Trunnion.
- Contact blade.
   Outer rocker.
- 6. Coil housing.
- A=-030 in. (-8 mm.).

#### End-cover

- 31. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and the insulated sleeve.
- 32. The pump is now ready for test (see leaflet AUA 213 A).

  After test replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.

Note.—The technical information contained in this Service Sheet supersedes any instruction previously published or authorized on this subject by the Company.

THE



FUEL PUMP

## Type AUF 400

(SPECIFICATION RANGE: AUF 400 TO AUF 499)

## DISMANTLING AND REASSEMBLING INSTRUCTIONS

MANUFACTURED

THE S.U. CARBURETTER COMPANY LIMITED

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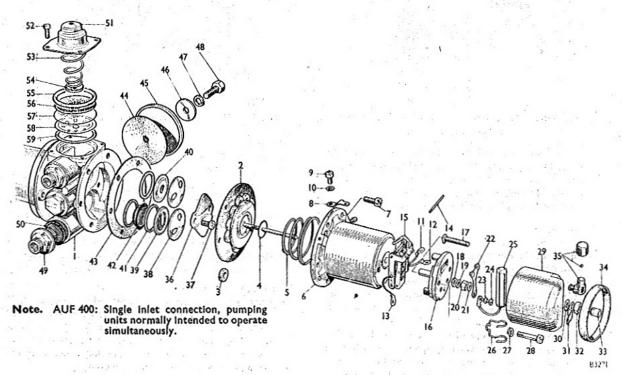
**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM



### THE S.U. TYPE AUF 400 RANGE PUMP



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٨	lo.	Description	No.	Description	No.	Description
	1.	Pump body.	21.	Washer—end cover seal.	41.	Washer-sealing.
	2.	Diaphragm and spindle assembly.	22.	Contact blade.	42.	Filter.
	3.	Roller-armature centralizing.	23.	Washer—5 B.A.	43.	Gasket-diaphragm.
	4.	Washer—impact.	24,	Screwcontact blade-5 B.A.	44.	Joint-inlet air bottle cover.
-	5.	Spring-armature.	25.	Condenser.	45.	Cover-inlet air bottle.
	6.	Housing-coll.	26,	Clip-condenser.	46.	Washer-dished.
	7.	Screw—securing housing—2 B.A.	27.	Washer-spring-2 B.A.	47.	Washer—spring.
-	8.	Connector-earth.	28.	Screw—pedestal to housing2 B.A.	48.	Screw—securing cover.
	9.	Screw-4B.A.	29.	End cover.	49.	Connection—inlet.
1	0.	Washer—spring—4 B.A.	30.	Washer—shakeproof.	50.	Washer—sealing.
1	1.	Tag—terminal—5 B.A.	31.	Connector—Lucar.	51.	Cover-delivery flow smoothing
1	2,	Tag—terminal—2 B.A.	32.	Nut—2 B.A.		device.
1	3.	Tag-earth-2 B.A.	33.	Sleave—insulating.	52.	Screw—securing cover.
1	4.	Pin-rocker pivot.	34.	Band-sealing.	53.	Spring—diaphragm.
1	5.	Rocker mechanism.	35.	Valve—vent.	54.	Cap-spring end.
1	6.	Pedestal.	36.	Plate—clamp,	55.	'O' ring-rubber.
1	7.	Stud-terminal.	37.	Screw—plate.	56.	Diaphragm-rubber.
1	8.	Washer-spring.	38.	Cap-valve.	57.	Diaphragm barrier—plastic.
1	9.	Washer—lead.	39.	Valve—inlet.	58.	Plate-diaphragm.
2	0.	Nut-terminal.	40.	Valve—outlet.	59.	Washer—sealing.
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#### DISMANTLING

#### Contact breaker

- Remove the insulated sleeve (33), terminal nut (32), and connector (31), together with its shakeproof washer.
   Remove the tape seal (if fitted) and take off the end-cover.
- Unscrew the 5 B.A. screw (24) which holds the contact blade (22) to the pedestal (16) and remove the condenser (25) (if fitted) from its clip. This will allow the washer (23), the long-coil lead (11), and the contact blade to be removed.

#### Coll housing and diaphragm

- Unscrew the coil housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- 4. Remove the earthing screw (9).
- 5. The coll housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall on the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.
- 6. Repeat these operations on the remaining pump unit.

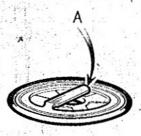
#### Pedestal and rocker

- 7. Remove the end-cover seal washer (21), unscrew the terminal nut (20); and remove the lead washer (19). This will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (28) holding the pedestal to the coil housing, remove the earth terminal tag (13) together with the condenser clip (26) (if fitted). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism (15) attached.
  - 8. Push out the hardened steel pln (14) which holds the rocker mechanism to the pedestal and separate the two.
  - 9. Repeat these operations on the remaining pump unit.

#### **Body and valves**

10. Unscrew the two Phillips screws (37) securing the valve clamp plate (36), remove the valve caps (38), valves (39) and (40), sealing washers, and filter (42).

Note. Dismantling of the delivery flow-smoothing device should only be undertaken if the operation of it is faulty, and if the necessary equipment for pressure-testing



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Fig. 1. The valve (Inlet and outlet)

A= W In. (1.6 mm.)

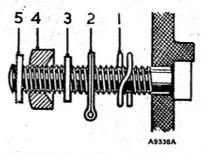


Fig. 2. The correct assembly of components on the terminal stud

after assembly is available. On this understanding proceed as follows:

- Remove the four 4 B.A. screws securing the delivery flow-smoothing device vented cover (51), remove the cover, the diaphragm spring (53), rubber 'O' ring (55), spring cap (54), diaphragm (56), barrier (57), diaphragm plate (58) and sealing washer (59).
- Remove the single 2 B.A. screw (48), securing the inlet air bottle cover (45). Remove the cover and gasket (44).
- 13. Unscrew the Inlet and outlet connections.

#### INSPECTION

If gum formation has occured in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent. solution of caustic soda, dipped in a strong nitric acid solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- Examine the plastic valve assemblies for kinks or damage to the valve plates. They can best be checked by blowing and sucking with the mouth.
- Check that the narrow tongue on the valve cage, which is bent over to retain the valve and to prevent it being forced out of position, has not been distorted but allows a valve lift of approximately 16 in. (1.6 mm.) (see Fig. 1).
- Examine the delivery flow-smoothing device diaphragm, barrier, plate, spring, and spring cap for damage. If in doubt, renew the diaphragm.
- 5. Examine the inlet air bottle cover for damage.
- Examine the valve recesses in the body for damage and corrosion; if it is impossible to remove the corrosion, or if the recess is pitted, the body must be discarded.
- Clean the filter with a brush and examine for fractures, renew if necessary.
- Examine the coil lead tag for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- Examine the pedestal for cracks or other damage, in particular to the narrow ridge on the edge of the rectangular hole on which the contact blade rests.
- If fitted, examine the non-return vent valve in the endcover for damage, ensure that the small ball valve is free to move.

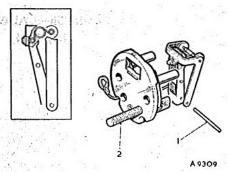


Fig. 3. Fitting the rocker assembly to the pedestal, (Inset) the correct position of the centre toggle spring

- 12. [Examine the diaphragm for signs of deterioration.
- 13. Renew the following parts: all fibre and cork washers, gaskets, and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts, and unions.

#### ASSEMBLY

#### Pedestal and rocker

Note. The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

1. Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 3) through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact points, the centre toggle

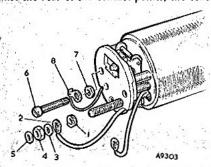


Fig. 4. Attaching the pedestal to the coil housing

spring is above the spindle on which the white rollers run. This positioning is important to obtain the correct 'throw over' action. It is also essential that the rockers are perfectly free to swing on the pivot pin and that the arms are not binding on the legs of the pedestal.

If necessary the rockers can be squared up with a pair of thin-nosed pliers.

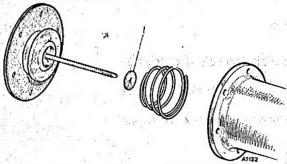


Fig. 5. Fitting the diaphragm to the coil housing. Note the impact washer (1)



Fig. 6. Inserting the diaphragm centralizing rollers

- Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head.
- 3. Assemble the 2 B.A. spring washer (1) (Fig. 4), and put the terminal stud through the 2 B.A. terminal tag (2), then fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).
- 4. Assemble the pedestal to the coil housing (Fig. 4) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8). When a condenser is fitted, its wire clip base is placed under the earthing tag and the spring washer is dispensed with.
- Tighten the screws, taking care to prevent the earthing tag (8) from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack. Repeat these operations on the remaining pedestal and rocker assembly.

Do not fit the contact blade at this stage.

#### Diaphragm assembly

- Place the armature spring into the coil housing with its larger diameter towards the coil (Fig. 5).
- 7. Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by inserting the spindle in the hole in the coll and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over'; this must not be confused with jamming the armature on the coll housing internal steps.
- 10. Fit the 11 brass centralizing rollers (Fig. 6) by turning

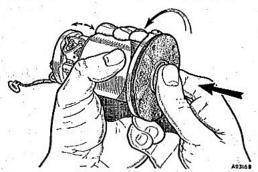


Fig. 7. Setting the diaphragm. Unscrew until the rocker just 'throws over'

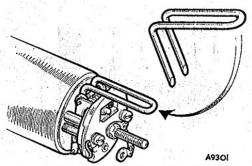


Fig. 8. Fitting the roller retaining fork

back the diaphragm edge and dropping the rollers into the coll recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling out.

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

- 11. Holding the coil housing assembly in the left hand in an approximately horizontal position (see Fig. 7), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and then again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- 12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 8). This is done to prevent the rollers from falling out when the coil housing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

Repeat these operations on the remaining diaphragm assembly.

#### **Body components**

13. In the AUF 400 range of pumps the valve assemblies are retained internally in the body by a clamp plate secured with self-tapping screws (see Fig. 9). The inlet valve recess in the body is deeper than the outlet recess to allow for the filter and extra washer. Another feature of these pumps is the incorporation of an air bottle on the inlet and a flow-smoothing device on the delivery side.

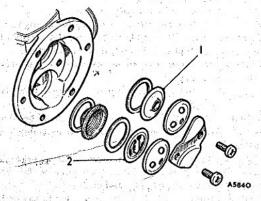


Fig. 9. The valve assembly, AUF 400 range
1. Outlet.
2. Inlet

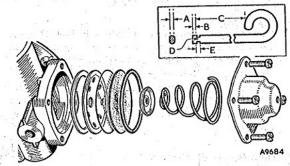


Fig. 10. The delivery flow smoothing device, AUF 400 range pumps

(Inset, enlarged) an assembly tool made from  $\frac{1}{8}$  in. (3 mm.) dia. (10 s.w.g.) iron wire. A, B, and  $E = \frac{1}{16}$  in. (1.6 mm.) C = 2 in. (50 mm.) D = .090 in. (2 mm.)

The inlet air bottle is a chamber in the body casting blanked off by a simple cover and joint washer held by a single screw. The delivery flow-smoothing device is formed by a perforated metal plate which is in contact with a plastic barrier backed by a rubber diaphragm, all held in position by a spring and end-cap retained by a vented cover. This assembly seals the delivery chamber in the body.

- 14. Screw in the inlet and outlet connections with their sealing rings. Assemble the outlet valve components into the outlet recess in the following order, first a joint washer, then the valve, tongue side downwards, then the valve cap.
- 15. Assemble the inlet valve into the inlet recess as follows: first a joint washer, then the filter, dome side downwards then another joint washer, followed by the valve assembly, tongue side upwards, then the valve cap.
- 16. Take care that both valve assemblies nest down into their respective recesses, place the clamp plate on top, and tighten down firmly to the body with the two screws.
- Replace the inlet air bottle cover with its joint washer and tighten down the central screw.
- 18. Place the sealing washer in the bottom of the delivery flow-smoothing device recess (see Fig. 10), follow this with the perforated diaphragm plate, dome side downwards, then the plastic barrier, followed by the rubber diaphragm. Insert the 'O' section sealing ring into the recess and ensure that it seats evenly. Place the diaphragm spring, large ends towards the vented cover, into the cover, place the spring end-cap on the small end of the spring, pass the assembly tool (see Inset) through the cover, spring, and end cap and turn it through 90° so

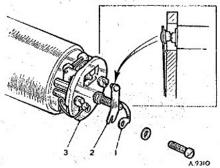


Fig. 11. Setting the correct relative position of blade and rocker contact points

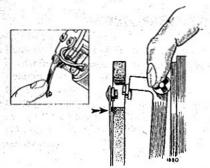


Fig. 12. Setting the contact blade to ensure contact with the pedestal ridge

that tension may be applied to the spring during assembly. Finally, fit the spring and cap assembly onto the diaphragm, tighten the four retaining screws and release the assembly tool. The pump should be pressure-tested after disturbance of the flow-smoothing device.

#### **Body attachment**

- 19. Fit the joint washer to the body, aligning the screw holes.
- 20. Offer up the coil housing to the body, ensuring correct seating between them.
- 21. Line up the six securing screw holes, making sure that the cast lugs on the coil housing are at the bottom, insert the six 2 B.A. screws finger-tight. Fit the earthing screw with its Lucar connector.
- 22. Remove the roller-retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It is not necessary to stretch the diaphragm before tightening the securing screws.
- 23. Tighten the securing screws in sequence as they appear diametrically opposite each other.

#### Contact blade

- 24. Fit the contact blade (2) (Fig. 11) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw. When a condenser is fitted the tag on it is placed under the coil
- 25. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 11), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner. As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.
- 26. Tighten the contact blade attachment screw when the correct setting is obtained.

#### Contact gap setting

27. Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal (Fig. 12). If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

28. Check the lift of the contact blade tip above the top of the

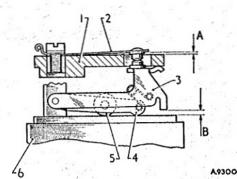


Fig. 13. The rocker finger settings on modified rocker assemblies

- Pedestal.
- Inner rocker.
- Contact blade.
- Trunnion.
- Outer rocker.
- Coil housing.
- A==.035 in. (.9 mm.).
- B=-070 in. (1.8 mm.).

pedestal (A) (Fig. 13) with a feeler gauge, bending the stop-finger beneath the pedestal, if necessary, to obtain a lift of .035 ± .005 in. (.9 ± .13 mm.).

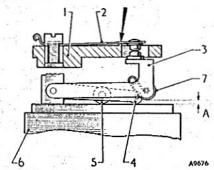
29. Check the gap between rocker finger and coil housing (B) (Fig. 13) with a feeler gauge, bending the stop-finger, if necessary, to obtain a gap of 070 ± 005 in. (1.8 ± 13 mm.).

#### Earlier-type rocker assemblies

Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip (see Fig. 14). Then check if a .030 in. (.8 mm.) feeler will pass between the fibre rollers and the face of the coil housing. If necessary the tip of the blade can be set to correct the gap.

#### End-cover

- 31. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and the insulated sleeve.
- 32. The pump is now ready for test (see leaflet AUA 213 A). After test replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.



The contact gap setting on earlier-type rocker Fig. 14. assemblies

- Pedestal.
- Inner rocker.
- Contact blade.
- Trunnion. 6. Coil housing.
- Outer rocker.

A=-030 in. (·8 mm.).

NOTE: The technical information contained in this Service Sheet supersedes any Instruction previously published or authorized by the Company.

THE



FUEL PUMP

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# Type AUF 500

(SPECIFICATION RANGE: AUF 400 TO AUF 499)

## DISMANTLING AND REASSEMBLING INSTRUCTIONS

MANUFACTURED

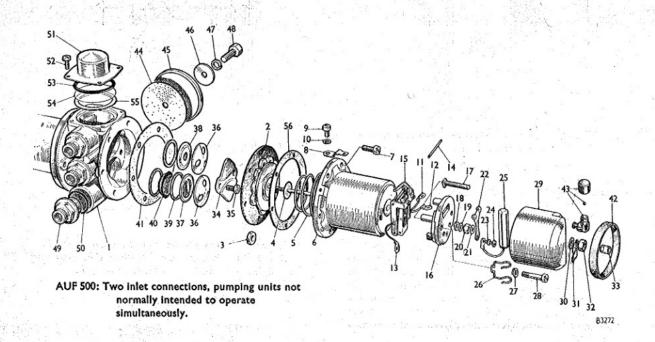
THE S.U. CARBURETTER COMPANY LIMITED

Proprietors: MORRIS MOTORS LIMITED

WOOD LANE • ERDINGTON • BIRMINGHAM 24
TELEPHONE: ERDINGTON 7371 (9 lines) TELEGRAMS: CARBURFLEX, BIRMINGHAM



### THE S.U. TYPE AUF 500 RANGE PUMP



No.	Description	No.	Description	No.	Description
1.	Pump body.	20.	Nut-terminal.	39.	Washer-sealing.
2.	Diaphragm and spindle assembly.	21.	Washer-end cover seal.	40.	Filter.
3.	Roller—armature centralizing.	22.	Contact blade.	41.	Gasket-dlaphragm.
4.	Washer—impact.	23.	Washer5 B.A.	42.	Band-sealing.
5.	Spring-armature.	24.	Screwcontact blade-5 B.A.	43.	Valve-vent.
6.	Housing-coil.	25.	Condenser,	44.	Joint-inlet air bottle.
7.	Screw—securing housing—2 B.A.	26.	Clip-condenser.	45.	Cover-inlet air bottle.
8.	Connector—earth.	27.	Washer—spring—2 B.A.	46.	Washer-dished.
9.	Screw—4 B.A.	28.		47.	Washer-spring.
10.	Washer—spring—4 B.A.		2 B.A.	48.	Screw—cover.
11.	Tag—terminal—5 B.A.	29,		49.	Connection—inlet.
12.	Tag—terminal—2 B.A.		Washer—shakeproof, Connector—Lucar.	50.	Washer—sealing.
13.	Tag-earth-2 B.A.		Nut—2 B.A.	51.	Cover-delivery air bottle.
14.	Pin-rocker pivot.	33.		52.	Screw—cover.
15.	Rocker mechanism.		Plate-clamp.	53.	'O' ring-rubber.
16.	Pedestal.	35.	or order a section of section size	54.	Diaphragm—plastic.
17.	Stud terminal.	36.	Cap—valve.	55.	
18.	Washer-spring.	37.	Valve—inlet.	56.	
19.	Washer-lead.	38.	Valve—outlet.	50.	only).

#### DISMANTLING

#### Contact breaker

- Remove the insulated sleeve (33), terminal nut (32), and connector (31), together with its shakeproof washer.
   Remove the tape seal (if fitted) and take off the end-cover.
- Unscrew the 5 B.A. screw (24) which holds the contact blade (22) to the pedestal (16) and remove the condenser (25) (if fitted) from its clip. This will allow the washer (23), the long-coil lead (11), and the contact blade to be removed.

#### Coil housing and diaphragm

- Unscrew the coil housing securing screws (7), using a thick-bladed screwdriver to avoid damaging the screw heads.
- 4. Remove the earthing screw (9).
- 5. The coil housing (6) may now be removed from the body (1). Next remove the diaphragm and spindle assembly (2) by taking hold of the diaphragm and unscrewing it anti-clockwise until the armature spring (5) pushes the diaphragm away from the coil housing. It is advisable to hold the housing over the bench so that the 11 brass rollers (3) will not fall on the floor. The diaphragm and its spindle are serviced as a unit and should not be separated.
- 6. Repeat these operations on the remaining pump unit.

#### Pedestal and rocker

- 7. Remove the end-cover seal washer (21), unscrew the terminal nut (20), and remove the lead washer (19). This will have flattened on the terminal tag and thread and is best cut away with cutting pliers or a knife. Unscrew the two 2 B.A. screws (28) holding the pedestal to the coil housing, remove the earth terminal tag (13) together with the condenser clip (26) (if fitted). Tip the pedestal and withdraw the terminal stud (17) from the terminal tag (12). The pedestal (16) may now be removed with the rocker mechanism (15) attached.
- 8. Push out the hardened steel pin (14) which holds the rocker mechanism to the pedestal and separate the two.
- 9. Repeat these operations on the remaining pump unit.

#### **Body and valves**

- 10. Unscrew the inlet and outlet unions.
- Unscrew the self-tapping screws (35) securing the clamp plate (34) holding the valve assemblies on both sides of the body, remove the valve assemblies (37 and (38) with the perforated caps (36), filters (40) and joint washers (39).
- Remove the inlet air bottle cover by unscrewing the single 2 B.A. securing screw (48).
  - Note. Dismantling of the delivery air bottle should only be undertaken if it is faulty in operation and if the necessary equipment for pressure-testing after assembly is available. On this understanding proceed as follows:
- 13. Remove the delivery air bottle cover by unscrewing the



Fig. 1. The valve (inlet and outlet)  $A = \frac{1}{16} \text{ in. (1.6 mm.)}$ 

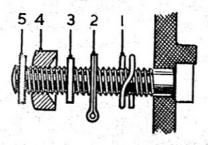


Fig. 2. The correct assembly of components on the terminal stud

four screws. Remove the 'O' ring (53), the plastic diaphragm (54), and joint washer (55).

#### INSPECTION

If gum formation has occurred in the fuel used in the pump, the parts in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by being boiled in a 20 per cent. solution of caustic soda, dipped in a strong nitric acid solution and finally washed in boiling water. Light alloy parts must be well soaked in methylated spirits and then cleaned.

- Clean the pump and inspect for cracks, damaged joint faces, and threads.
- 2. Examine the plastic valve assemblies for kinks or damage to the valve plates. They can best be checked by blowing and sucking with the mouth. Check that the narrow tongue on the valve cage, which is bent over to retain the valve, and to prevent it being forced out of position, has not been distorted but allows a valve lift of approximately 16 in. (1-6 mm.). (see Fig. 1).
- Examine the delivery air bottle diaphragm and end-cover for damage. If in doubt, renew the diaphragm. Examine the inlet air bottle cover for damage.
- Examine the valve recesses in the body for damage and corrosion; if it is impossible to remove the corrosion, or if the recess is pitted, the body must be discarded.
- 5. Clean the filters with a brush, examine for fractures, renew if necessary.
- Examine the coil lead tags for security and the lead insulation for damage.
- Examine the contact breaker points for signs of burning and pitting; if this is evident, the rocker assembly and spring blade must be renewed.
- Examine the pedestal for cracks or other damage, in particular to the narrow ridge on the edge of the rectangular hole on which the contact blade rests.
- If fitted, examine the non-return vent valve in the endcover for damage, ensure that the small ball valve is free to move.
- 10. Examine the diaphragm for signs of deterioration.
- Renew the following parts: all fibre washers, gaskets, and 'O' section sealing rings, rollers showing signs of wear on periphery, damaged bolts, and unions.

#### ASSEMBLY

#### Pedestal and rocker

Note. The steel pin which secures the rocker mechanism to the pedestal is specially hardened and must not be replaced by other than a genuine S.U. part.

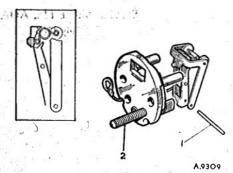


Fig. 3. Fitting the rocker assembly to the pedestal.

(Inset) the correct position of the centre toggle spring

 Invert the pedestal and fit the rocker assembly to it by pushing the steel pin (1) (Fig. 3) through the small holes in the rockers and pedestal struts. Then position the centre toggle so that, with the inner rocker spindle in tension against the rear of the contact points, the centre toggle spring is above the spindle on which the white rollers run. This positioning is important to obtain

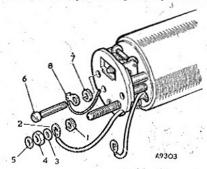


Fig. 4. Attaching the pedestal to the coil housing

the correct 'throw over' action. It is also essential that the rockers are perfectly free to swing on the plyot pin and that the arms are not binding on the legs of the pedestal. If necessary the rockers can be squared up with a pair of thin-nosed pliers.

- Assemble the square-headed 2 B.A. terminal stud to the pedestal, the back of which is recessed to take the square head.
- 3. Assemble the 2 B.A. spring washer (1) (Fig. 4), and put the terminal stud through the 2 B.A. terminal tag (2), then fit the lead washer (3) and the coned nut with its coned face to the lead washer. (This makes better contact than an ordinary flat washer and nut.) Tighten the 2 B.A. nut and finally add the end-cover seal washer (5).

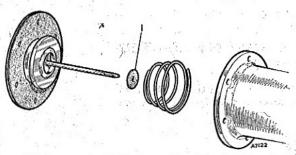


Fig. 5. Fitting the diaphragm to the coil housing. Note the impact washer (1)



Fig. 6. Inserting the diaphragm centralizing rollers

- 4. Assemble the pedestal to the coil housing (Fig. 4) by fitting the two 2 B.A. pedestal screws (6), ensuring that the spring washer (7) on the left-hand screw (9 o'clock position) is between the pedestal and the earthing tag (8). When a condenser is fitted, its wire clip base is placed under the earthing tag and the spring washer is dispensed with.
- Tighten the screws, taking care to prevent the earthing tag (8) from turning, as this will strain or break the earthing flex. Do not overtighten the screws or the pedestal will crack. Repeat these operations on the remaining pedestal and rocker assembly.

Do not fit the contact blade at this stage.

#### Diaphragm assembly

- Place the armature spring into the coil housing with its larger diameter towards the coil (Fig. 5).
- Before fitting the diaphragm make sure that the impact washer is fitted to the armature. (This is a small neoprene washer that fits in the armature recess.) Do not use jointing compound or dope on the diaphragm.
- Fit the diaphragm by inserting the spindle in the hole in the coil and screwing it into the threaded trunnion in the centre of the rocker assembly.
- Screw in the diaphragm until the rocker will not 'throw over'; this must not be confused with jamming the armature on the coil housing internal steps.
- 10. Fit the 11 brass centralizing rollers (Fig. 6) by turning back the diaphragm edge and dropping the rollers into the coil recess. The pump should be held in the left hand, rocker end downwards, to prevent the rollers from falling

On later-type rocker mechanisms with adjustable fingers fit the contact blade and adjust the finger settings as described under those headings, then carefully remove the contact blade.

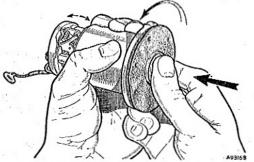


Fig. 7. Setting the diaphragm. Unscrew until the rocker just 'throws over'

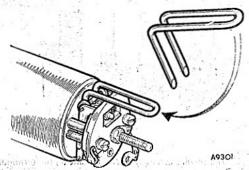


Fig. 8. Fitting the roller retaining fork

- 11. Holding the coil housing assembly in the left hand in an approximately horizontal position (see Fig. 7), push the diaphragm spindle in with the thumb of the right hand, pushing firmly but steadily. Unscrew the diaphragm, pressing and releasing with the thumb of the right hand until the rocker just 'throws over'. Now turn the diaphragm back (unscrew) to the nearest hole and again 4 holes (two-thirds of a complete turn). The diaphragm is now correctly set.
- 12. Press the centre of the armature and fit the retaining fork at the back of the rocker assembly (Fig. 8). This is done to prevent the rollers from falling out when the coil housing is placed on the bench prior to fitting the body, and is not intended to stretch the diaphragm before tightening the body screws.

Repeat these operations on the remaining diaphragm assembly.

#### **Body components**

13. In the AUF 500 range of pumps the valve assemblies are retained internally in the body by a clamp plate secured with self-tapping screws (see Fig. 9). The inlet valve recess in the body is deeper than the outlet valve recess to allow for the filter and extra washer.

Another feature of the pumps is the incorporation of an air bottle on both the inlet and delivery sides. The inlet air bottle is a chamber in the body casting, blanked off by a simple cover and joint washer, held in position by a single screw.

The delivery air bottle is formed by a flexible plastic diaphragm, separating the delivery chamber in the body from a sealed volume of air contained in the air bottle cover. This cover is secured by four screws and sealed by an 'O' section sealing ring and joint washer.

 Screw in the inlet and outlet connections with their sealing rings.

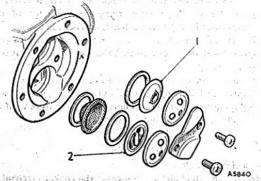


Fig. 9. The valve assembly, AUF 500 range

1. Outlet.

2. Inlet.

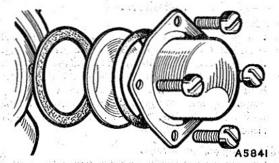


Fig. 10. The delivery air bottle, AUF 500 range pumps

- 15. Assemble the outlet valve components into the outlet recess in the following order: first a joint washer, then the valve assembly, tongue side downwards, then the perforated cap.
- 16. Assemble the inlet valve into the recess as follows: first a joint washer, then the filter, dome side downwards, then another joint washer, followed by the valve assembly, tongue side upwards, then the perforated cap.
- 17. Take care that both assemblies nest down evenly into their respective recesses. Place the clamping plate on the cap top and tighten down onto the body with the two screws.
- 18. Repeat these operations on the remaining valve assembly.
- Replace the inlet air bottle cover with its joint washer and tighten down the central screw.
- 20. Place a sealing washer in the bottom of the delivery air bottle recess, place the plastic diaphragm, dome side downwards, then add the 'O' section sealing ring and tighten down the cap with its four screws. The pump should be pressure-tested after disturbance of the delivery air bottle.

#### **Body attachment**

- Fit the joint washer to the body, aligning the screw holes.
   Offer up the coil housing to the body, ensuring a good seating between them.
- Line up the six securing screw holes, making sure that the cast lugs in the coil housing are at the bottom, insert the six 2 B.A. screws finger-tight.
- 23. Fit the earthing screw with its Lucar connector.
- 24. Remove the roller-retaining fork before tightening the body securing screws, making sure that the rollers retain their position; a displaced roller will cut the diaphragm. It is not necessary to stretch the diaphragm before tightening the securing screws.
- Tighten the securing screws in sequence as they appear diametrically opposite each other.

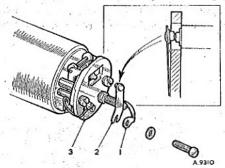


Fig. 11. Setting the correct relative position of blade and rocker contact points

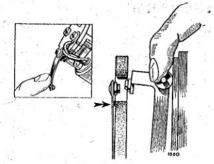


Fig. 12. Setting the contact blade to ensure contact with the pedestal ridge

#### Contact blade

- 26. Fit the contact blade (2) (Fig. 11) and coil lead (1) to the pedestal (3) with the 5 B.A. washer and screw. When a condenser is fitted the tag on it is placed under the coil lead tag.
- 27. Adjust the contact blade so that the contact points on it are a little above the contact points on the rocker when the points are closed (see Fig. 11), also that when the contact points make or break, one pair of points wipes over the centre line of the other in a symmetrical manner. As the contact blade is provided with a slot for the attachment screw, some degree of adjustment is possible.
- Tighten the contact blade attachment screw when the correct setting is obtained.

#### Contact gap setting

29. Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow rib or ridge which projects slightly above the main face of the pedestal (Fig. 12). If it does not, slacken the contact blade attachment screw, swing the blade clear of the pedestal, and bend it downwards a sufficient amount so that when repositioned it rests against the rib lightly, over-tensioning of the blade will restrict the travel of the rocker mechanism.

#### Modified rocker assemblies

- 30. Check the lift of the contact blade tip above the top of the pedestal (A) (Fig. 13) with a feeler gauge, bending the stop-finger beneath the pedestal, if necessary, to obtain a lift of 035±005 in. (9±13 mm.).
- Check the gap between rocker finger and coll housing (B) (Fig. 13) with a feeler gauge, bending the stop-finger, if necessary, to obtain a gap of -070±-005 in. (1-8±-13 mm.).

#### Earlier-type rocker assemblies

32. Check the gap between the points indirectly by carefully holding the contact blade against the rib on the pedestal without pressing against the tip (see Fig. 14). Then check

Wallet - cooling

hasenhauth revolution and the

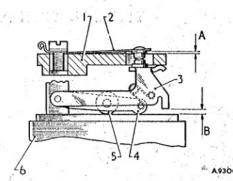


Fig. 13. The rocker finger settings on modified rocker assemblies

- 1. Pedestal.
- 4. Inner rocker.
- 2. Contact blade.
- 5. Trunnion.
- 3. Outer rocker.
- 6. Coil housing.
- A=-035 in. (-9 mm.).
- B=-070 in. (1.8 mm.).

if a 030 in. (8 mm.) feeler will pass between the fibre rollers and the face of the coll housing. If necessary the tip of the blade can be set to correct the gap.

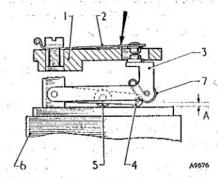


Fig. 14. The contact gap setting on earlier-type rocker assemblies

- 1. Pedestal.
- 4. Inner rocker.
- 2. Contact blade.
- 5. Trunnion.
- Outer rocker. 6. Coll housing.
  - A=-030 In. (-8 mm.).

#### End-cover

- 33. Tuck all spare cable into position so that it cannot foul the rocker mechanism. Ensure that the end-cover seal washer is in position on the terminal stud, fit the bakelite end-cover and lock washer, secure with the brass nut, fit the terminal tag or connector, and the insulated knob.
- 34. The pump is now ready for test (see leaflet AUA 213 A).

  After test replace the rubber sealing band over the end cover gap and seal with adhesive tape. This may be removed to improve ventilation when the pump is mounted internally in a moisture-free region but must be retained otherwise.

Note.—The technical information contained in this Service Sheet supersedes any instruction previously published or authorized on this subject by the Company.

## PUMP TESTING



MANUFACTURED

## THE S.U. CARBURETTER COMPANY LIMITED

Proprietors: MORRIS MOTORS LIMITED

WOOD LANE

ERDINGTON

**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines) TELEGRAMS: CARBURFLEX, BIRMINGHAM

#### PUMP TESTING

If the efficiency of a particular pump is in doubt, it is much more informative and satisfactory to check over its performance on the special Pump Test Stand, than to endeavour to obtain comprehensive information with the pump mounted on the car itself.

The test stand, originally designed for earlier type S.U. pumps, has now been extended in range for use with all pumps produced. This has been achieved by the provision of adaptor sets which simulate the specified performance conditions. Type HP pump adaptors incorporate a special restrictor on delivery which reproduces the high pressure test requirement. The output hole size varies with the type of pump being tested (see diagram).

#### (1) Preparation

Mount the pump on the test stand using the adaptor set specified (see key to diagram). Connect the feed and earth terminals to the test battery.

Check the contact point settings as described in the

appropriate leaflet.

When the pump is mounted on the test stand, it is preferable to use a cut away moulded end cover, as this prevents the hinge pin from falling out, and at the same time makes it possible to observe the action of the contact breaker, or check for excessive sparking.

Use paraffin in the tank rather than perrol, as it will lessen

the fire risk. Ensure an adequate supply.

Note. The AUF 400 range and Dual HP pumps (Fig. 4) should be tested with both sides working simultaneously, whereas the AUF 500 range pumps (Fig. 5) which comprise two separate pumping units must have each side tested independently.

Dual Type L pumps may be tested with the equipment shown in Fig. 4 and AUF Type 200 L with the equipment shown in Fig. 6 after removing the pressure head simulator and connecting the outlet pipe direct to the transfer block, using a length of plastic tubing to extend the inlet pipe in both cases.

#### (2) Priming and delivery check

When switched on, the pump should prime, from dry, within 10-15 seconds—the liquid should then rise in the glass tube until it flows over the top of the pipe, in which is drilled a side hole. If the output is not up to specification, the side hole will be able to carry off all the liquid pumped, and the paraffin will not flow over the top. This constitutes a form of flowmeter which establishes in a simple manner whether the pump is giving a sufficient output or not.

#### (3) Air leak check

When the pump is first started, air bubbles will be mixed with the liquid discharged from the pipe projecting downwards into the flowmeter, but these bubbles should cease after the pump has been running for a minute or so. If they do not, an air leak is indicated either in the pump itself or the connecting unions, and these must be rectified.

#### (4) Valve seat check

Let the pump run for about ten minutes and then test as follows:

With the delivery tap turned completely off, the pump should stand without repeating for a minimum of 20 seconds. If it repeats, this indicates that the inlet valve is not operating correctly. On earlier type pumps with metal disc valves this may be remedied by removing the discs and rubbing down the smooth face using fine lapping paste on a flat surface, or by dressing the valve seat. On pumps fitted with Melinex valves, malfunction of the inlet valve must be investigated.

#### (5) Maximum delivery check

On AUF 300, AUF 460, Dual L, and Dual HP pumps, in addition to the delivery check carried out in para. (2), it is necessary to time the delivery as follows:

AUF 300	 	 	1 pint in 30 seconds
AUF 400	 	 	1 pint in 15 seconds
Dual L	 	 	1 pint in 22 seconds
Dual HP	 	 	1 pint in 27 seconds

#### (6) Minimum delivery check

Check with the tap turned on only slightly. Also check that, if the tip of the spring blade is pressed gradually inwards to reduce the stroke, the pump continues to work with an increasing frequency until it eventually stops because there is no gap left between the points.

#### (7) Reduced voltage check

With the tap turned full on, test the pump on 9-5 volts if it is a 12-volt pump, or on 5 volts if it is a 6-volt pump, and it should work satisfactorily under these conditions although probably with a reduced output.

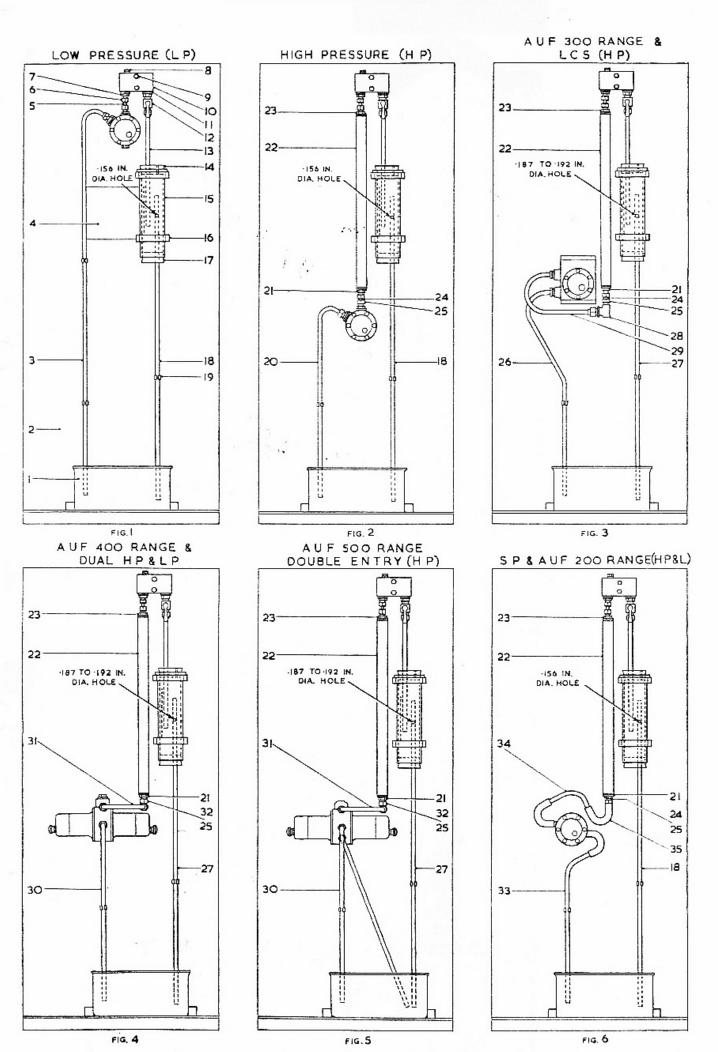
#### (8) Sparking check

Check that excessive sparking does not take place between the contact points—some moderate degree is permissible, but there is a special 'leak' wire incorporated in the coil winding, designed to keep this down to a minimum—if excessive sparking occurs it is probable that this comparatively delicate wire has fractured, and on these rare occasions the complete coil unit must be replaced.

#### PUMP TEST SCHEDULE

Pump Type	Voitage	Test at Volts.	Starting Voitage Wet. Min.	Minimum Flow gal.jhr.	At Suction Head	And Delivery Head	Bore of Pipe	Cut-off Pressure Ib./sq. in.	Max. Saf Working Voltage
L	6	6.5	4-5	8	42 in.	6 in.	ţ in.	1-5 max.	9
HP	6	6.5	5	7	30 in.	48 in.	in.	2 to 3-8	9
L	12	13-5	8	5	42 ia.	6 in.	in.	1-5 max.	18
НР	12	13.5	9-5	7	30 in.	48 in.	₹ in.	2 to 3·8	18
LCS	12	13.5	9.5	12.5	30 in.	48 in.	₹ in,	2 to 3·8	18
DUAL L	12	13.5	8	20	42 in.	6 in.	å in.	1-5 max.	18
DUAL HP	12	13.5	9-5	16	30 in.	48 in.	à in.	2 to 3-8	18
LCS	24 .	26	19	12-5	30 in.	48 in.	à in.	2 to 3-8	30
HP	24	26	19	7	30 in.	48 in.	t in.	2 to 3·8	30
SP	12	13-5	9.5	7	18 in.	48 in.	in.	2 to 38	18
AUF 200	12	13-5	9-5	7	18 in.	48 in.	į in.	2 to 3-8	18
AUF 300	12	13-5	9-5	15	18 in.	48 in.	it in.	2 to 3-8	18
AUF 400	12	13-5	9.5	30	18 m.	48 in.	à in.	2 to 3-8	18
AUF 500	12	13.5	9.5	12-5	18 in.	48 in.	તું in.	2 to 3·8	18
AUF 200L	12	13.5	8	8	42 in.	6 in.	i in.	1.5 max.	18

### **TEST STAND ADAPTORS**



## KEY TO DIAGRAM

Ports required for basic test stand and for LP pumps (Fig. 1):

tem No.	Part No.	Description	Item No.	Part No.	Description
1	EXP 102-2	Tank	10	EXP 102-9	Block
2	EXP 102-1	Test stand	11	AUC 3521	Washer
3	EXP 102-8	Suction pipe	12	EXP 102-16	Тар
-	EXP 102-19	Nipple	13	EXP 102-7	Outlet pipe
	EXP 102-20	Nut		EXP 102-19	Nipple
4	EXP 102-41	Plate		EXP 102-20	Nut
	EXP 102-37	Screw	14	EXP 102-15A	Bung
	AUC 2673	Nut	15	EXP 102-6	Glass jar
5	EXP 102-13	Nipple	16	EXP 102-3	Clip
6	AUA 1487	Nut		EXP 102-37	Screw 4 B.A.
	AUA 1486	Olive	1	AUC 2673	Nut 4 B.A.
7	AUC 1290	Union	17	EXP 102-15	Bung
8	AUC 1453	Screw 2 B.A.	18	EXP 102-5	Tube
	AUC 1863	Washer	19	EXP 102-4	Clip
9	EXP 102-35	Bolt		EXP 102-38	Washer
	EXP 102-36	Nut	.	EXP 102-39	Nut 6 B.A.
				EXP 102-40	Screw

#### Additional parts required for HP pumps (Fig. 2):

Item No.	Part No.	Description	Item No.	Part No.	Description
18	EXP 102-5	Tube	22	EXP 102-27	Tube
20	EXP 102-34	Tube		EXP 102-28	Weight
	EXP 102-19	Nipple		EXP 102-29	Needle
	EXP 102-20	Nut	1	AUC 3127	Spring
21	EXP 102-31	Union	23	EXP 102-26	Union
	EXP 102-30	Bush		AUC 1542	Washer
	AUC 1542	Washer	24	EXP 102-33	Nipple
	700 1312		25	AUA 1487	Nut (2 off)
			.	AUA 1486	Olive

#### Additional parts required for LCS and AUF 300 pumps (Fig. 3):

tem No.	Part No.	Description	Item No.	Part No.	Description
21	EXP 102-31	Union Bush	25	AUA 1487	Nut (2 off)
	EXP 102–30 AUC 15 <del>4</del> 2	Washer	26	AUA 1486 EXP 102–46	Olive Tube
22	EXP 102-27 EXP 102-28	Tube Weight		AUA 4649 AUA 4650	Nipple Nut
	EXP 102-29	Needle	27	EXP 102-25	Tube
23	AUC 3127 EXP 102–26	Spring Union	28 29	EXP 102-25 EXP 102-45	Elbow Tube
24	AUC 1542 EXP 102-33	Washer Nipple		EXP 102-23 AUA 4649	Nut Nipple (2 off)
- '	2717 102 00	1.1.44.2		AUA 4650	Sleeve nut

### \* \*ditional parts required for Dual HP and LP and AUF 400 and 500 range pumps (Figs. 4 and 5):

Item No.	Part No.	Description	Item No.	Part No.	Description
21	EXP 102-31	Union	27	EXP 102-25	Tube
	EXP 102-30	Bush	30	EXP 102-47	Tube (2 off
	AUC 1542	Washer		EXP 102-19	Nipple >for
22	EXP 102-27	Tube		EXP 102-20	Nut   AUF 500)
	EXP 102-28	Weight		EXP 102-50	Pipe
	EXP 102-29	Needle	31	EXP 102-20	Nut (2 off)
	AUC 3127	Spring	il	EXP 102-19	Nipple (2 off)
23	EXP 102-26	Union		AUA 1479	Adaptor
	AUC 1542	Washer	32		
25	AUA 1486	Olive			
	AUA 1487	Nut			

#### Additional parts required for Type SP and AUF 200 HP and L pumps (Fig. 6):

Item No.	Part No.	Description	Item No.	Part No.	Description
18	EXP 102-5	Tube	23	EXP 102-26	Union
21	EXP 102-31	Union		AUC 1542	Washer
	EXP 102-30	Bush	24	EXP 102–33	Nipple
	AUC 1542	Washer	25	AUA 1487	Nut
22	EXP 102-27	Tube	33	EXP 102-49	Pipe
	EXP 102-28	Weight	34	EXP 102-48	Pipe
	EXP 102-29 AUC 3127	Needle Spring	35	21G 2019 or AUA 1953	Elbow (3 off)

THE



## FUEL PUMP

# RECONDITIONING INSTRUCTIONS

MANUFACTURED

by

#### THE S.U. CARBURETTER COMPANY LIMITED

Proprietors: MORRIS MOTORS LIMITED

WOOD LANE

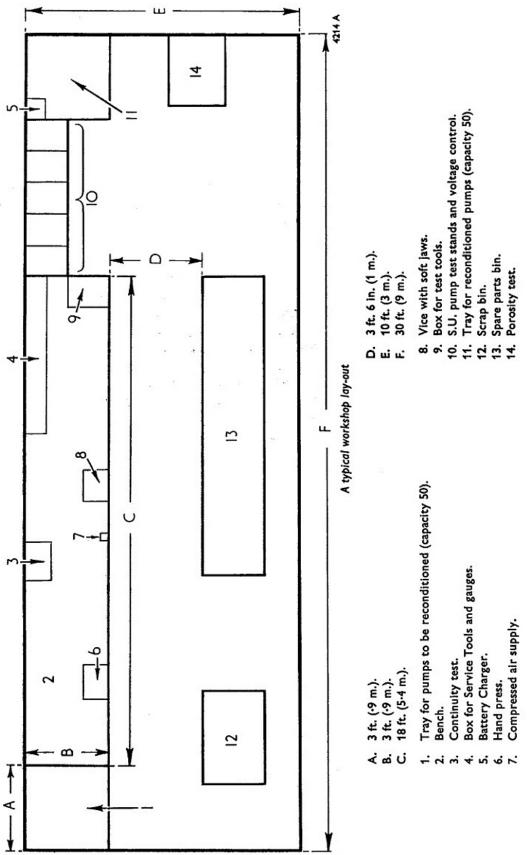
**ERDINGTON** 

**BIRMINGHAM 24** 

TELEPHONE: ERDINGTON 7371 (9 lines)

TELEGRAMS: CARBURFLEX, BIRMINGHAM





S.U. pump test stands and voltage control.

Tray for reconditioned pumps (capacity 50).

Box for Service Tools and gauges.

Continuity test.

Battery Charger.

Hand press.

Compressed air supply.

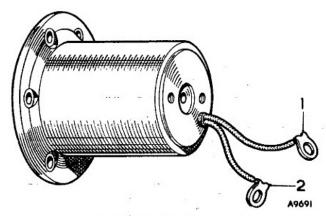


Fig. 1 The coil and housing assembly

1. 5 B.A. tag.

2. 2 B.A. tag.

#### **COIL AND HOUSING**

A range of leaflets on the dismantling, reassembling, and testing of S.U. fuel pumps is available and the appropriate instructions should be referred to for the operations not detailed in this leaflet.

The coil and housing are dealt with on the basis that they have been detached from the body of the pump and that the diaphragm assembly and the contact breaker assembly have been removed.

#### Dismantling

- 1. Clip off the terminal tags (1 and 2, Fig. 1).
- Press out the coil from the coil housing. This can be done on an ordinary garage bench press using punch Part No. TUA 4.

#### Inspection

- Examine the coil housing for cracks and damage to the joint face.
- Check the depth of step in the housing (Fig. 3) using depth gauge TUA 1.
- Check the small bore diameter in the end of the coll housing with plug gauge TUA 9 (Fig. 4).
- On HP-type long-coil housings re-drill the 1/6 in. (1.6 mm.) diameter vent hole in the corner of the flange as on short-coil housings (Fig. 5).

#### Assembly

Note. Commencing in 1961 HP pumps have been fitted with a shortened coil housing of the same overall length as the LP-type pump, i.e. approximately  $\frac{9}{10}$  in. (14-3 mm.) shorter than the long housing. Production of the long-coil housing has been discontinued, but use can still be made of it

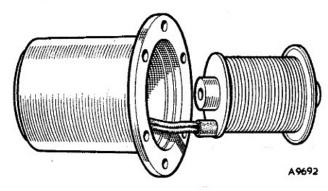


Fig. 2. The coil and housing separated

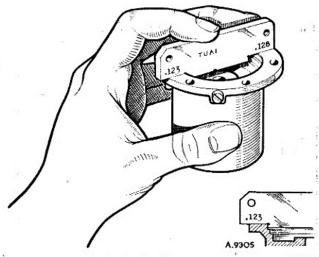


Fig. 3. Checking the depth of coil housing step using gauge TUA 1

in reconditioning if a coil, similar to that used on short housings but wound on the longer core, is used. This coil is not assembled so deeply into the housing as the original long coil; it is pressed in with the same tool as is used for the HP short-housing pumps.

It is essential when the short coils are fitted in long housings that the  $\frac{1}{16}$  in. (1-6 mm.) diameter vent hole in the side of the coil housing should be re-drilled in the corner of the flange (see Fig. 5).

The diameter of the core on which the coil is wound is smaller on the 'L'-type pump than that of all other pumps.

- Ensure that the housing is clean and free from rust, paint the housing black taking care to keep paint away from joint faces and to avoid clogging the vent hole.
- Select the correct coil for the type of pump being reconditioned (see table).
- 3. Fit the rubber sleeve over the cables, and insert the coll in the housing, threading the cables through the 1-in. diameter hole. Using the locating fixture TUA 17 mounted in a suitable press, press in the coil assembly with the punch specified for the particular type of coil.

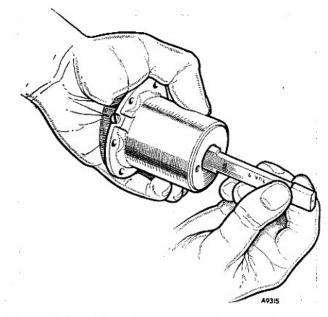


Fig. 4. Checking the housing small bore diameter using gauge TUA 9

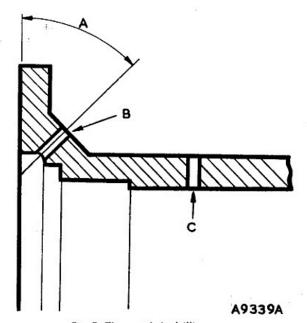


Fig. 5. The vent hole drilling

- A. 45°.
- B. New drilling.
- C. Existing drilling (earlier pumps).
- 4. Check the position of the coil in its housing with the depth gauge specified for the type of coil (see Fig. 6).
- 5. Solder the terminal tags to the wires taking care that the smaller 5 B.A. tag is soldered to the longer wire.

#### DIAPHRAGM AND SPINDLE ASSEMBLIES

#### General

A range of diaphragm assemblies has been evolved to meet the special requirements of various types of pump, and the correct assembly to suit the particular type of pump being reconditioned must be selected from the list given.

The type of assembly with a brass spindle is gradually being superseded by an assembly with a steel spindle riveted in a different manner. Assemblies of either type may be used, according to availability.

Assemblies having two layers of material usually have one

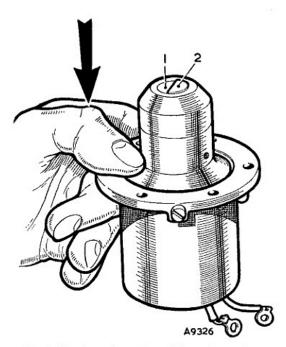


Fig. 6. Checking the position of the coil in its housing

1. Low

2. High

layer punched with small holes to prevent any fuel which might seep between the layers from vaporizing and causing swelling of the diaphragm assembly.

It is essential, during assembly, to check whether a packing or joint washer should be fitted with the diaphragm, between the coil housing and body. Two layer diaphragms do not need a joint washer, assemblies having one layer only must be assembled with a packing washer on the coil housing side of the diaphragm to maintain the correct assembly dimensions.

Certain assemblies have an extra layer of thin synthetic material in addition to the standard diaphragms. This is known as a 'barrier' diaphragm and is impervious to a wide variety of fuels. It is essential that a joint washer should always be fitted between the 'barrier' diaphragm and the pump body; jointing compound or dope should never be used.

#### COIL IDENTIFICATION COLOURS

Type of pump	Colour of Leads	Assembly Tool to be Used	Coil Position Gauge to be Used
Low-pressure 'L' 6-volt Low-pressure 'L' 12-volt	Green Red or Black	TUA 3	TUA 2 TUA 2
High-pressure HP long-coil housing High-pressure LCS long-coil housing Reconditioned	·· }Brown	TUA 6	TUA 5
High-pressure HP long-coil housing alternatives High-pressure LCS long-coil housing alternatives	Cream, Yellow or   Black	TUA 7	TUA 8
High-pressure short-coil housing HP, SP, LCS, and AUF	Brown or Black	TUA 7	TUA 8
High-pressure long-coil housing High-pressure short-coil housing	Blue	TUA 6 TUA 7	TUA 5 TUA 8

#### **Table of Diaphragm Spindle Assemblies**

Pump Type or Specification						Old Type Brass Spindle	New Type Steel Spindle	Remarks
'L' low-pressure	••		•••	••		AUA 6011	AUB 6081 AUB 6027	
HP long-coil housing	••			••	••	AUA 6012	AUB 6029 AUB 6091	
HP short-coil housing		••	8. · · 8	••		AUB 6004	AUB 6025 AUB 6071 AUB 6040	Rover cars
LCS long-coil housing	••					AUA 6012	AUB 6029 AUB 6091	
LCS short-coil housing				••		AUB 6015	AUB 6040 AUB 6071	11.411.411.41

When reconditioning long-coil housing pumps and fitting coils to the new depth, the old long armature spring (2 in.

[5-08 cm.] free length) must be changed for a shorter spring as shown in table:

#### **Table of Armature Springs**

Pump Type or Specification	on			Part No.	Free Length	Working Load
'L' low-pressure	••	••		AUA 1449	<sup>7</sup> / <sub>8</sub> in. (22·2 mm.)	2½ to 2½ lb. at ½ in. (1·134 to 1·247 kg. at 3·2 mm.)
Old long HP and LCS				AUA 1785	2 in. (5·08 cm.)	Obsolete
Reconditioned long HP and LCS (having repositioned long coil)	••	••	••	AUA 875	1½ in. (3·2 cm.) or 1 in. (2·54 cm.) or ½ in. (1·6 cm.)	5 lb. 10 oz. to 6 lb. 8 oz. at ½ in. (2-55 to 2-95 kg. at 6-35 mm.)
Reconditioned long HP and LCS			•••	AUB 521	1½ in. (3·2 cm.) or 1 in. (2·54 cm.) or	7½ to 7½ lb. at -10 in.
(having repositioned short coil)	••	••	••	2	§ in. (1·6 cm.)	(3-402 to 3-51 kg. at 25-4 mm.)
Short HP, LCS, SP, and AUF (with short coil)	••	••		AUB 521	1½ in. (3·2 cm.) or 1 in. (2·54 cm.) or ½ in. (1·6 cm.)	7½ to 7½ lb. at -10 in. (3-402 to 3-5 kg. at 25-4 mm.)

#### **TOOLS AND EQUIPMENT**

#### Standard bench tools

2 B.A. spanner.
Small screwdriver.
Medium screwdriver.
§ in. Whitworth ring spanner.
Pliers.
Vice (with soft jaws).

Soldering iron (small bit).

Small bench press.

Feeler gauges.

## The following tools will be supplied by B.M.C. Service Ltd., to Official Reconditioning Distributors only:

- TUA 1. Depth gauge.
- TUA 2. Coil position gauge.
- TUA 3. Coil assembly punch.
- TUA 4. Punch for removing coil.
- TUA 5. Coil position gauge.
- TUA 6. Coil assembly punch.
- TUA 7. Coil assembly punch.
- TUA 8. Coil position gauge.
- TUA 9. Not-Go plug gauge.
- TUA 14. Rocker setting gauge.
- TUA 15. Rocker setting tool and gauge.
- AUA 564. Roller retaining fork.
- EXP 102. Test stand.